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Volume 148 FEBRUARY 28, 1952 No. 9

WALDO G. BOWMAN
Editor

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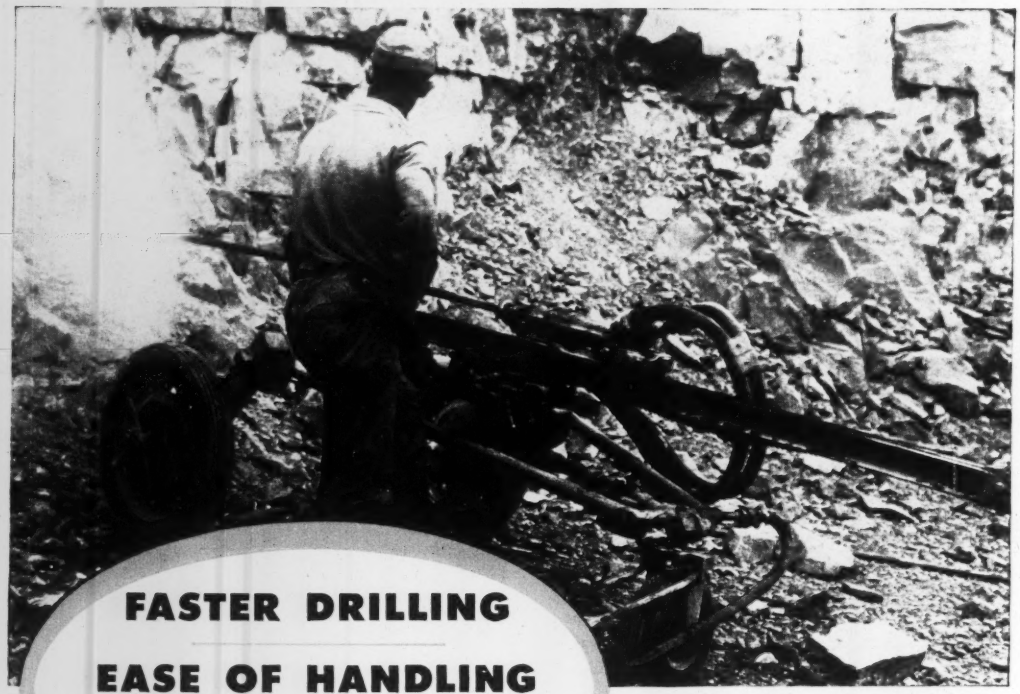

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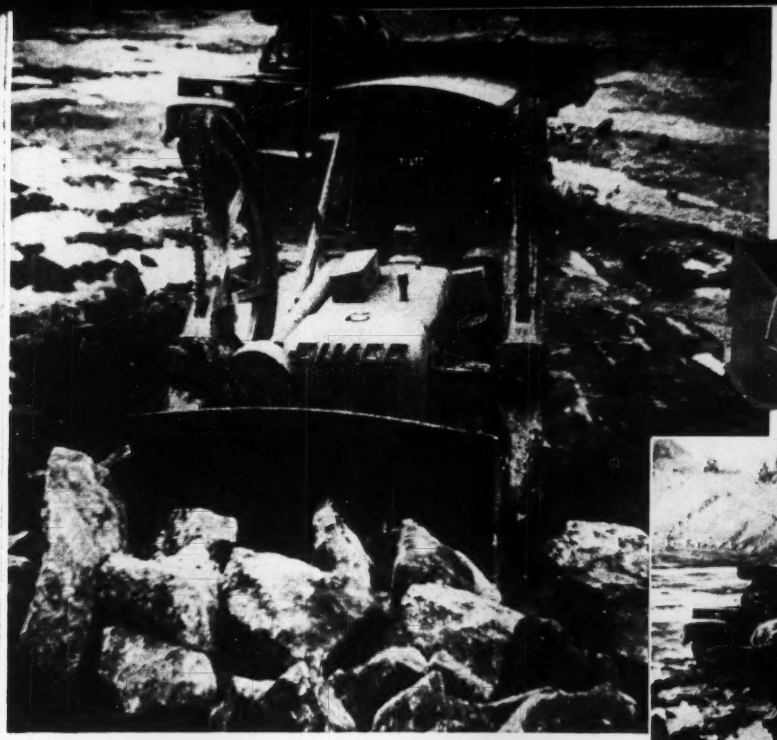

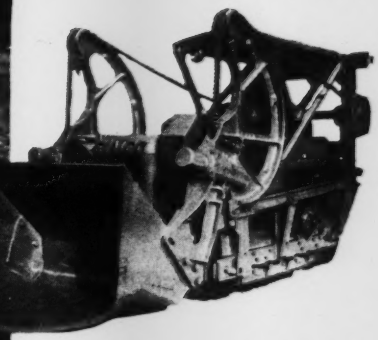

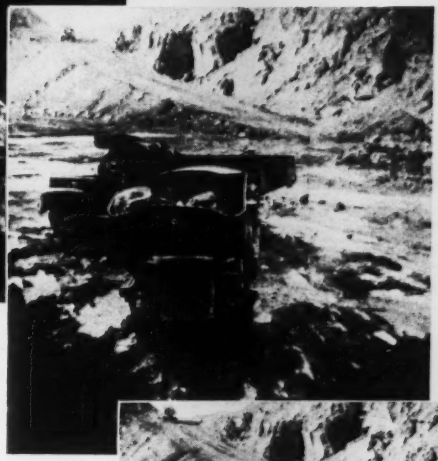

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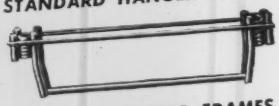

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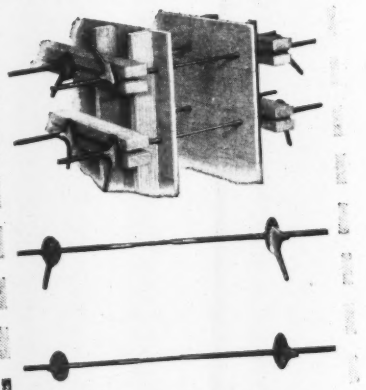

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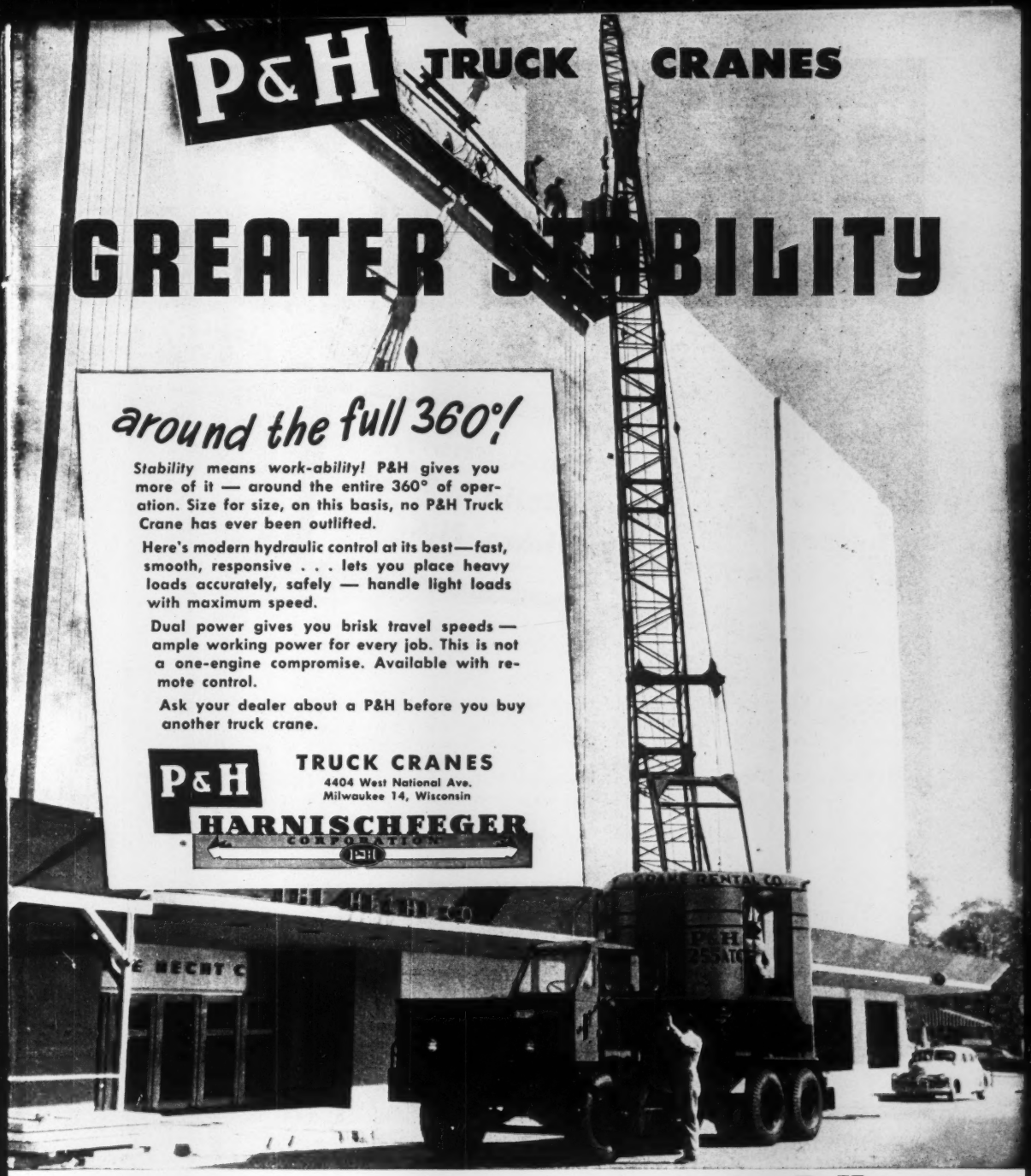
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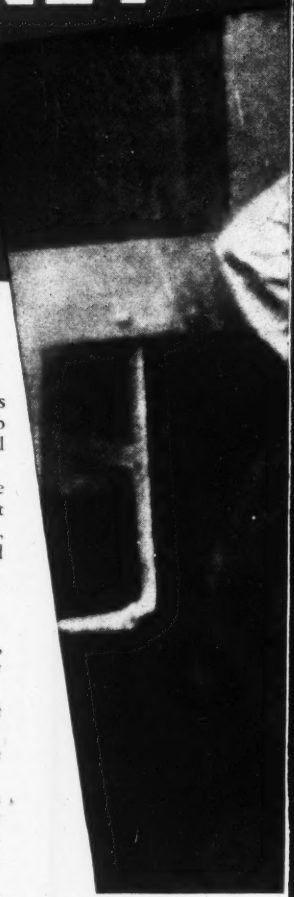
"TEXACO KEEPS EQUIPMENT ON SAVES US MONEY"

—says John L. Carrickhoff, superintendent, Nello L. Teer Company, Durham, N.C.



Nello L. Teer Company — like alert and progressive contractors everywhere — keeps a sharp eye on costs; knows that to keep them low, equipment must stay on the job and out of the shop. That's why, for example, it uses *Texaco Ursa Oil X*** in all heavy-duty gasoline and Diesel engines.

*Texaco Ursa Oil X*** is both detergent and dispersive. Thus, harmful carbon, sludge and gum just don't exist. Engines stay clean, rings free; valves seat properly. That means better compression and combustion — less fuel consumption. At the same time, maintenance costs are less because engine parts are fully protected against wear and corrosion.

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For wheel bearing protection that requires no seasonal change, use *Texaco Marfak Heavy Duty.* It seals itself in, seals out dirt and moisture.

For crawler track lubrication, use *Texaco Track Roll Lubricant.* It gives effective protection even under severe conditions.

Let a Texaco Lubrication Engineer tell you about the Texaco Simplified Lubrication Plan — how *with only six lubricants* you can handle every major lubrication requirement. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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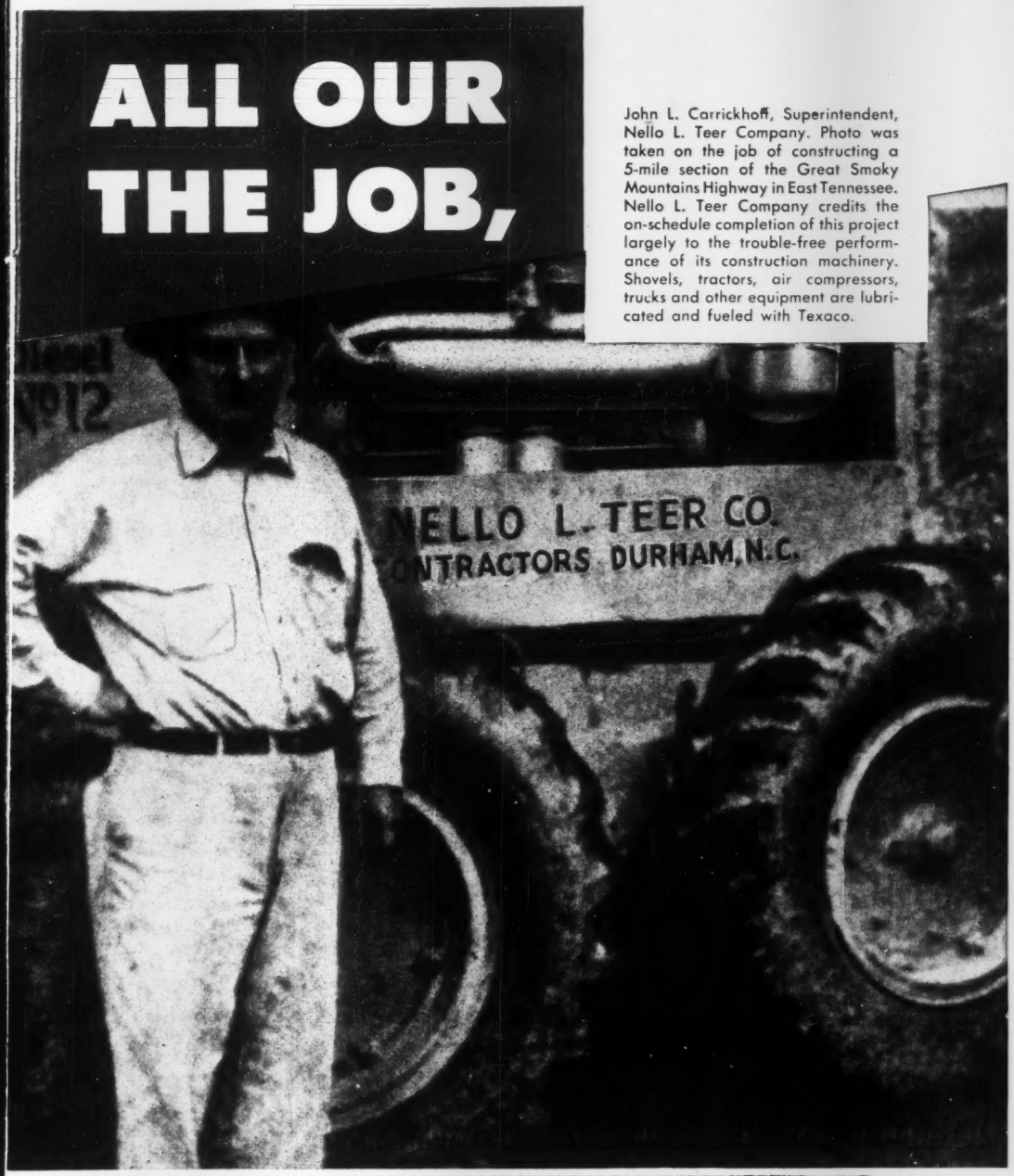

John L. Carrickhoff, Superintendent, Nello L. Teer Company. Photo was taken on the job of constructing a 5-mile section of the Great Smoky Mountains Highway in East Tennessee. Nello L. Teer Company credits the on-schedule completion of this project largely to the trouble-free performance of its construction machinery. Shovels, tractors, air compressors, trucks and other equipment are lubricated and fueled with Texaco.

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Faithfully yours

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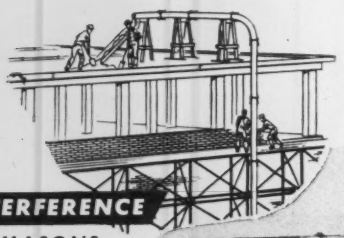
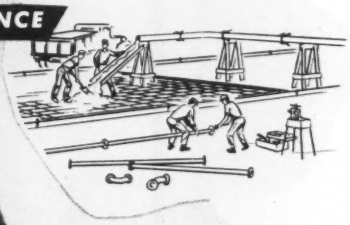
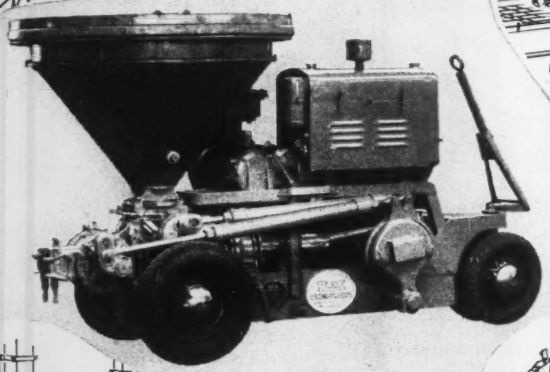
You're not if you're using Rex® Pumpcrete® . . . concrete by pipe line . . . because with Pumpcrete *there is no interference.* Other crews can continue working *without interruption* while concrete is poured right beside them.



NO INTERFERENCE
WITH MASONS

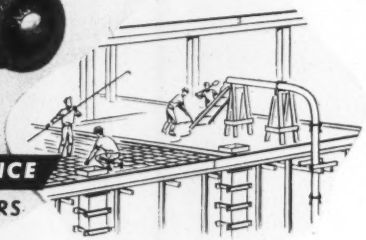
NO INTERFERENCE
WITH PLUMBERS





NO INTERFERENCE
WITH CARPENTERS

NO INTERFERENCE
WITH ROD BUSTERS



So don't be penalized by the high cost of interference *on any job* . . . interference that means dollars out of your pocket. Investigate the savings of concrete by pipe line today. Get the details from your local Rex distributor, or write to Chain Belt Company, 4633 W. Greenfield Avenue, Milwaukee 1, Wisconsin.

No delays waiting for various trades to finish up.

No buggies, buggy runs or heavy equipment to move.

No runway storage problem.

Move placing equipment from floor to floor in 15 minutes! Just extend the pipe.

Eliminate trestling, scaffolding, towers and other expensive preparatory costs.

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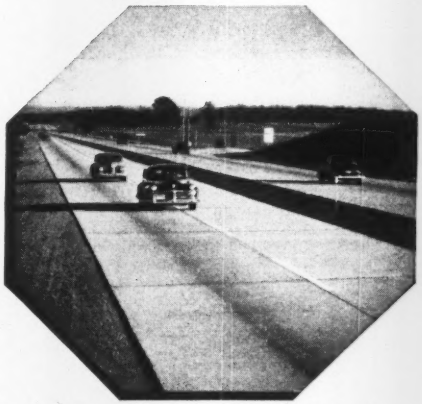
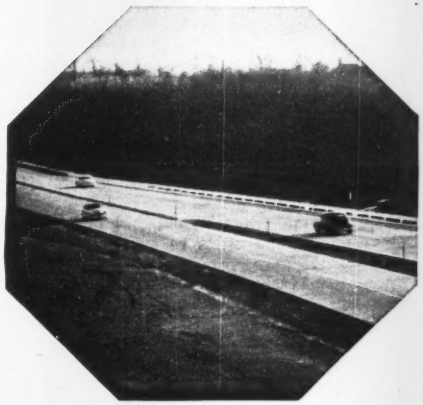
Original section of the Pennsylvania Turnpike near milepost 211. This was built during 1940.

Record of performance on Pennsylvania Turnpike leads to choice of *CONCRETE* on all of it



Eastern extension near milepost 311. Built in 1950.



Western extension near milepost 68. Built in 1951.

In 1940 the original section of the Pennsylvania Turnpike—160 miles of concrete—was opened. In 1950 it was extended eastward 100 miles, in 1951 westward 67 miles.

By 1950 the Turnpike Commission had 10 years' experience in financing, operating and maintaining the Turnpike. After examining its records and reviewing a decade of improvements in engineering design, materials and construction methods for heavy-duty pavements, the Commission specified concrete for these extensions.

This decision by the only turnpike authority to build additional mileage after extensive financing and operating experience deserves serious consideration by those responsible for Federal, state and county primary roads.

Concrete is the logical choice for heavy-traffic roads. It is moderate in first cost, yet can be designed accurately for any axle load—and will *keep* its load-carrying capacity throughout its long service life. It costs less to maintain and lasts longer. Result: ***low annual cost.***

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READER COMMENT

Alternate designs

Sir: Your editorial of Sept. 27, 1951, "Alternate Designs" is of great importance at present when shortage of some structural materials requires the highest economy of design.

That alternate designs might reduce the cost of some substantial parts of buildings by 30 percent and more was recently demonstrated and proved by public bidding for three general purpose warehouses to be built for the Corps of Engineers, at the Sacramento Signal Depot. The specifications permitted alternates in materials and methods of construction "TO OBTAIN SUITABLE BUILDINGS AT THE LOWEST COST TO THE GOVERNMENT". The government provided two alternate designs for bidding: Schedule "A" with reinforced concrete wall construction, estimated at $3,771,300; and Schedule "B" with concrete block wall construction, estimated at $3,544,800. On Nov. 21, thirteen bids were received and publicly opened, ten of them proposing alternate designs which throughout were considerably below the bids based on Schedules A and B. For example, the price of the low-bidder's alternate was $2,492,394, and his bid submitted on the basis of Schedule "A" was $3,295,233, or more than 32 percent higher.

In my opinion, there is no interference with professional ethics, if an engineer prepares alternate design for the bidding contractor, especially in cases where taxpayer's money is involved. Even from the standpoint of technical progress alternate designs are essential. This should not eliminate the basic design by competent engineers FOR REALLY FAIR FEES, because the relatively short time available for bidding usually doesn't permit securing all the important information upon which an alternate design can be worked out.

The idea of alternate design is not new, and in this connection I recommend reading the article "How One Consulting Engineer Got a Job" by Elwyn E. Seelye, consulting engineer in New York City, (ENR June 2, 1921, p. 940). His interesting statements more than thirty years ago should be remembered and revived on this occasion:

(1) "Many of them [engineers] are in a state of economic bondage, because they are selling their time on a salaried basis rather than their engineering product as a commodity." (2) "After the armistice, the architect of the Board of Education decided that the best interests of the city [New York] demanded that alternate bids be permitted on a reinforced concrete frame for school buildings . . . because there was a country-wide shortage of structural steel. What is to be particularly commended is the fact that the architect, by leaving the design open, permitted a FULL PLAY FOR ENGINEERING TALENT." (3) "A preliminary design and estimate had to be prepared as an assistance to the general contractor in making up his bids, if an engineer was to stand a chance with a successful bidder." (4) "The selection of the type of construction was closely connected with the commercial aspects of the problem. To sum up, this job is typical of nearly all entering wedge work. The contractor's engineer must create ideas which are attractive to a contractor."

These statements are still true today.

J. J. POLIVKA,
Consulting Engineer,
Berkeley, Calif.

Raise concrete stresses?

Sir: Evidently the author of the letter, "Watchmaking Prestressing" (ENR Oct. 11, p 48), is not very familiar with prestressed-concrete construction. And his pen must have slipped when he wrote that a wire straightening machine costs at least $25,000, which is not far from ten times exaggerated.

But the most astonishing thing of all is his proposition of making ordinary reinforced concrete competitive with prestressed concrete by using "equal standards" for both designs! This statement shows a complete misconception of concrete construction. I wonder what client would accept the "economical design" proposed in this letter for reinforced concrete.

Too high compressive stresses with respect to the ultimate strength can not safely be permitted in concrete, whether reinforced or prestressed. Codes only allow stresses up to 45% of the ultimate strength at 28 days, and, in fact, designers of prestressed concrete structures usually limit the permissible stress to one third of that figure.

Now, since concrete can only stand low tensile stresses, the tensile stress in the reinforcing bars of a reinforced concrete beam must be limited to only part of their yield stress if one wants to prevent opening of cracks.

Instead of that, if the beam is pre-

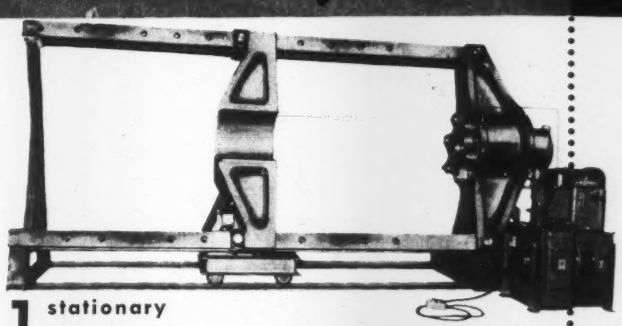
(*Continued on p. 15*)

which of these

forcing presses

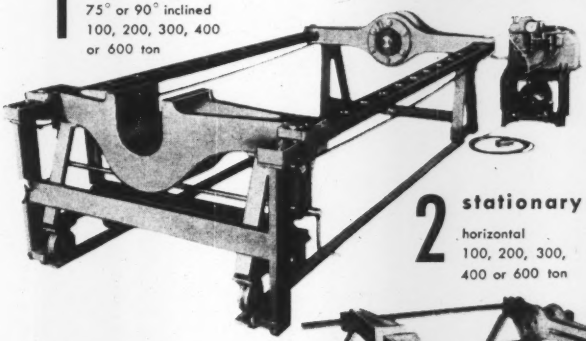
will do *your jobs* best?

HYDRAULICS Rodgers KEEP THE WORLD MOVING



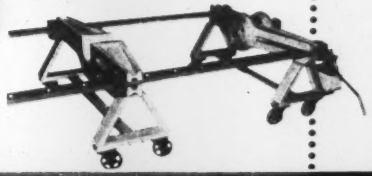
1 stationary

75° or 90° inclined
100, 200, 300, 400
or 600 ton



2 stationary

horizontal
100, 200, 300,
400 or 600 ton



3 portable

100 or 200 ton

NO MATTER which size and type best meets your requirements for pressing, bending, forming or straightening, you'll get a press with all the design and construction features that insure finest operation and long service.

Rodgers line of versatile forcing presses have separate pumping units—choose from hand-operated or power-driver pumps . . . The hydraulic cylinder is removable from head member for servicing or for other use . . . Tracks, tension bars, abutment member and head member are all separate units to facilitate handling and erection of press . . . Presses with power pumps can be controlled from any desired location.

Get complete information and you'll see why Rodgers Forcing Presses are best for your type service jobs.

Send for New Catalog

Rodgers Forcing Press Catalog No. 315A has 20 pages of descriptions and specifications on the complete line. Ask for your copy.

Rodgers Hydraulic, Inc.

7441 Walker St., St. Louis Park, Minneapolis 16, Minn.

HYDRAULIC POWER EQUIPMENT

LOCK JOINT

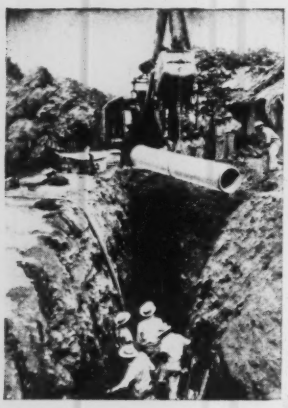
the ideal pressure pipe

for sewer force mains

Through the years Lock Joint has proven itself in water supply and transmission mains—and now more and more sanitary engineers are realizing its value for sewer force mains. It withstands high internal pressures and external loads, resists corrosion, tuberculation and rupture, has watertight flexible joints and will maintain a high carrying capacity for an estimated life of over 100 years.

Its performance is unexcelled, yet this high quality pipe is low in first cost and is virtually free from repair and maintenance charges. For top performance at rock bottom cost, specify Lock Joint Prestressed Concrete Cylinder Pipe for your next sewer force main project.

Lock Joint Prestressed Concrete Cylinder Pipe readily withstands the shocks of heavy city and highway traffic.



Its ability to withstand heavy backloads frequently makes it possible to lay Lock Joint Prestressed Concrete Cylinder Pipe in deep cuts without special bedding. The speed with which it may be laid and the fact that it can be immediately backfilled usually makes it unnecessary to sheet the trench.

SCOPE OF SERVICES—*Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.*

LOCK JOINT PIPE COMPANY

Est. 1905

P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich., Columbia, S. C.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R.

(Continued from p. 12)

stressed, the tensile stresses produced by the load are absorbed by the compressive stresses induced permanently in the concrete by the prestressing force. Within design limits, no cracking can happen to the concrete, whatever is the working stress in the steel. The bars, or wires, or cables, are just a means of creating the prestressing force. Their tension is only limited by the physical properties of the material they are made of, which must behave elastically, and sometimes by consideration of safety factor.

The principles of prestressed concrete and reinforced concrete are entirely different. Prestressed concrete is not improved reinforced concrete; it is a new form of the concrete-steel association.

G. M. DEMARQUE
Chief Engineer
Preload Company of Canada, Ltd.
Montreal, Canada

Engineering students

Sir: The following is taken from a year-end news letter that I have written to civil engineering alumni of the University of Kansas, and may contain some information of broader interest.

Statistics on enrollment are as follows:

University 6,500—decrease from last year 15%.

Engineering 994—decrease from last year 20%.

Civil Engineers 123—decrease from last year 20%.

Civil Seniors 44—decrease from last year 8%.

Engr. Freshmen 247—increase over last year 60%.

The enrollment of engineering freshmen is encouraging and no doubt reflects the present day demand for engineers.

Twelve of the 44 senior civils will complete their work in February. The majority of them will sign up with Uncle Sam.

The dean's office has been extremely busy this fall. In fact, it has been difficult at times to determine whether it is an administrative office or an employment agency. There has been a continuous stream of interviewers from industry, consulting offices, and government agencies to interview the seniors. The salary offerings continue to climb. The top offering for Civils is now $376.00 per month, and no one seems to be getting killed in the rush for the jobs.

G. W. BRADSHAW
Chairman, Department of Engineers
University of Kansas
Lawrence, Kansas

1 rubber-tired dozer replaces 3 crawlers

at LONE STAR STEEL

Texas' largest pig-iron producer, Lone Star Steel Co., Dallas, has greatly simplified and speeded clean-up operations at their Daingerfield open-pit mine by replacing 3 crawler tractors with 1 high-speed, rubber-tired C Tournadozer.

The Tournadozer cleans up around 3 to 5 draglines and shovels . . . where each crawler could clean for 1 or, at the most, 2 excavators. In addition, 19 m.p.h. Tournadozer is literally all over the mine 16 hours a day, 6 days a week, doing scattered dozing jobs that help keep daily ore production at scheduled 15,000 tons.

These miscellaneous tasks include: blading and cleaning haul roads, dozing overburden, cutting ramps, preparing dragline sites, and hauling equipment. Material ranges from rock and heavy ore (weighing over 4,100 lbs. per cubic yard) to sand, clay, and gumbo.

Tournadozer does particularly well in getting stalled trucks going because its constant-mesh transmission maintains a steady push.

3000 hours, 90% efficiency, tires still good

With 3000 hours of service on these tough assignments, Tournadozer is giving over 90% efficiency. Despite rocky and abrasive footing, the 6'x2' low-pressure tires still carry a substantial part of their original ground-gripping tread (see photos).

As W. L. Kendrick, division superintendent and veteran of the Mesabi Range, describes it: "For our work, where speed, mobility and power are essential, Tournadozer has proved very satisfactory. We are very pleased with its performance."

This is just one of many world-wide jobs where rubber tires, rolling on dirt, sand, rock and ore, produce more, at lower cost, than tracks grinding in grit. See your nearest LeTourneau Distributor for detailed case studies.

READ WHAT MEN WORKING THIS JOB SAY ABOUT TOURNADOZER

***M. J. Hughes*, mine superintendent,** "Best machine I've ever run into for the work we have it doing. It can't be beat in open pit mining."

***R. T. Dudley*, mine foreman,** "I don't see how we ran the mine before we had the Tournadozer."

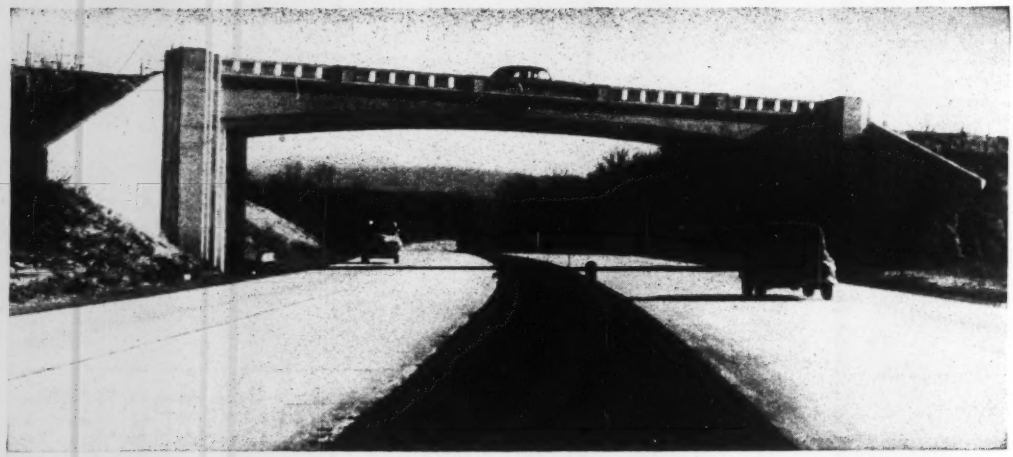
***Wiley E. Martin*, Tournadozer operator,** "Much faster on shovel clean-up and dozing, blading roads, and pushing trucks. I'd rather run it than a crawler-tractor."

LETOURNEAU EQUIPMENT

R. G. LeTOURNEAU, INC.
Peoria, Illinois

Tournadozer - Trademark Reg. U. S. Pat. Off. 82542

High-Level Performance!



Lone Star Air-Entrained Concrete Used for Easier Placing and Extra Durability on Well-Designed Bridges for Nation's Greatest Turnpike

ONE OF MANY bridge structures on Eastern Extension of Pennsylvania Turnpike, concreted with LONE STAR AIR-ENTRAINING PORTLAND CEMENT. Bridge, above, built by H. T. OSBURN CO., Franklin, Pa., under subcontract with H. J. WILLIAMS, INC., York, Pa., General Contractor.

★ Ever since its first use on public highways, in 1939, LONE STAR AIR-ENTRAINING PORTLAND CEMENT has played a steadily growing part, not only in paving many of the nation's principal highways and airports, but in concreting important structures of all kinds as well.

To the uniformly high chemical and physical quality characteristics for which all Lone Star Cements are noted, dependable air-entraining properties are assured by inter-grinding carefully controlled quantities of a tested air-entraining agent at time of manufacture.

Field performance over the entire range of construction shows that Lone Star air-entrained concrete mixes have better workability and plasticity, are practically free from bleeding and segregation, and provide greatly increased durability.

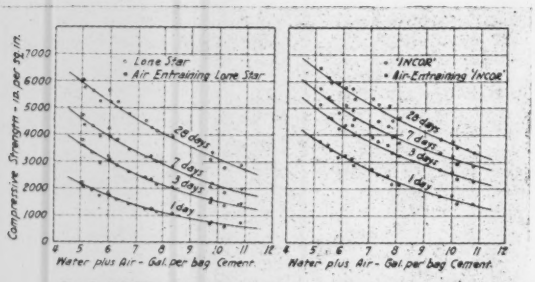


Fig. 2: (WATER + AIR) / CEMENT RATIO — STRENGTH RELATION
—from Lone Star Air-Entraining Cements booklet

Useful Information

Write for new, 36-page, illustrated booklet, summarizing field and laboratory experience with air-entrained concrete . . . with numerous tables and graphs, example at left. Practical information for designing new or adjusting established mixes, estimating materials, quantities tables, etc. For your copy of Lone Star Air-Entraining Cement Booklet—address Lone Star Cement Corporation, Room 1500, 100 Park Avenue, New York 17, N. Y.

LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

INDUSTRY PLANS HEAVY INVESTMENT— RIGHT THROUGH 1955

Spending for new plants and equipment will stay high right through 1955 if business carries out its present investment plans.

Capital investment by industry will total $16.7 billion in 1953, $15.1 billion in 1954, $14.1 billion in 1955 under present plans, according to McGraw-Hill's annual survey of industry's intentions to invest.

These plans are down from the huge total planned for 1952. But they are very big by any other standards. Even the figure for 1955—$14.1 billion—is larger than the actual total for any past year except 1948 and 1951. And actual spending may be even bigger than the survey shows—because lots of companies still haven't made their plans for future years.

• **Boost for Business**—Industry's big investment plans brighten the future business outlook. They make the prospect of a business recession in 1953-54-55 a lot less frightening than it might otherwise be.

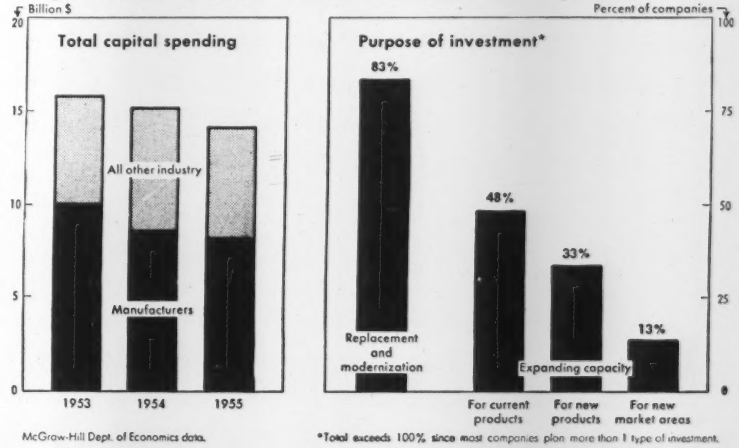
Up until now, many economists have expected a sharp drop in capital spending after 1952, when major expansion in the defense industries will be completed. With defense spending also leveling off and perhaps starting to decline in 1953, a sharp drop in capital spending could help start a severe business recession. Defense and capital spending are the two forces keeping business at a high level.

But if industry actually invests at the rates the survey indicates, this drop won't be so sharp. The economy will still have a sizeable cushion of business in the form of work on new industrial plants and equipment.

• **For Construction**—Big investment plans also meant good demand for new industrial construction after 1952. To be sure, industrial building is likely to decline faster than the overall total of capital spending—because industry will be putting more emphasis on replacement and modernization of its present plants and less emphasis on expansion of capacity.

But there will be plenty of spending for expansion—and thus for construction—included in industry's program. So industrial construction will still be substantial, even though well below the levels prevailing in 1951 and 1952.

Capital spending plans high through 1955 . . . . . replacement and modernization rank first in plans



McGraw-Hill Dept. of Economics data.

*Total exceeds 100% since most companies plan more than 1 type of investment.

Whirleys for farming? *Yes...*

CLYDE WHIRLEY HANDLES MUCH SOIL ON RECLAMATION PROJECT

This dredge-mounted Clyde Whirley is being used to dike off approximately 11,000 acres of marshland in South Central Oregon.

Handling a 3½ yd. bucket on a 150 ft. boom to dig muck soil averaging 16 feet in depth is no ordinary job but Clyde Whirley owners and operators expect and get unusual performance from these precision-engineered, quality-built machines.

If you have any unusual material handling problems, consult with Clyde engineers for recommendations and suggestions on how to economically solve them.

CLYDE

... and for factories too ...

WHIRLEYS
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BUILDERS TOWERS
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CAR PULLERS
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HANDI-CRANES
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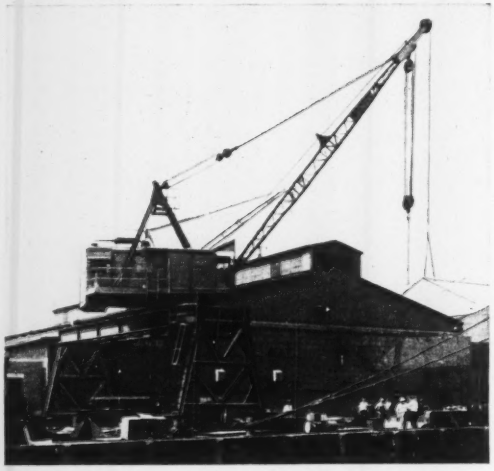
ROLLERS



CLYDE WHIRLEYS CUT INSTALLATION COSTS

No expensive, overhead trestle needed as for bridge type cranes . . . just two sets of tracks for Whirley to travel on. Clyde Whirleys save on storage space too. Their long-reaching, full-revolving booms permit rapid handling of materials on either side of the tracks.

Clyde Whirleys embody many features that result in greater ease and speed in handling, increased capacity, less maintenance and longer-life dependability. Investigate these Clyde advantages.

Write Today for Complete Information

CLYDE IRON WORKS, Inc. DULUTH MINNESOTA

SUBSIDIARY OF BARIUM STEEL CORP.

EDITORIALS

Change the "Disputes Clause"

THE CONSTRUCTION INDUSTRY should be grateful to the Associated General Contractors for its initiative in getting a hearing before Congress to plead for a change in the disputes clause of the standard government contract form. As H. E. Foreman, AGC's managing director, pointed out to the Senate Judiciary Committee, the Supreme Court's ruling in the Wunderlich case (ENR Dec. 6, 1951, p. 25) completely destroys the belief that the language of the clause does not preclude judicial redress of an injustice. The Supreme Court said that the only time a contractor can appeal to the courts against a ruling by a government contracting officer is when fraud can be both alleged and proved. Such instances are so rare as to be of no consequence.

The present language of the clause is that "the contractor may appeal in writing to the head of the department concerned, and the decision in writing of such head or his duly authorized representative shall be final and conclusive upon the parties thereto." In this language, with slight variations from time to time, this provision has persisted for at least 25 years.

Until the Supreme Court rendered its decision in the Wunderlich case, the courts had held that this wording did not preclude appeal to the courts from inequitable decisions of a department head. Now such right of appeal, in cases that do not involve fraud, can only be restored by legislation changing the language of the dispute clause to provide specifically for appeal to the U. S. Court of Claims. This is the session of Congress in which such legislation should be passed.

"Pull no punches"—Lovett

IT IS GOOD NEWS to read that Secretary of Defense Robert A. Lovett has given his generals and admirals the green light to fight back against false accusations by Congressional committees of waste and inefficiency in the rearmament program. "Pull no punches, but give them supportable facts, not alibis," says the Secretary. If this is good advice for top officers dealing with defense, it should be equally applicable for the Army Engineers charged with administering the civil works construction program.

Last fall (ENR Nov. 29, 1951, p. 21) we discussed in these columns the charges of waste and inefficiency that a Congressional committee had directed against the Corps of Engineers and its handling of river development projects. The committee reaped some spectacular headlines, permitted the Engineers a minimum of opportunity to reply to the charges and refused to make public the contents of a report upon which the charges were based. The Corps of Engineers took this treatment without substantial protest on the apparent grounds that it is not permissible to talk back to Congress or go over its head to the public. In our opinion such a policy not only harmed the Corps, but reflected on the entire engineering profession.

Now Secretary Lovett supports that belief in stating that false accusations against the defense program "undermine the confidence of the American people in the civilian and military leadership of the armed forces." He urges his department to fight back with facts. Thus any doubts that the Corps of Engineers may have had that their superiors would back them up are now dispelled. They, too, should pull no punches in dealing with unfair attacks by Congressional committees.

Clinic for water users

OHIO'S AMPLE WATER SUPPLY is more than amply polluted. Nobody had to attend the recent water clinic held in Columbus to learn that. The real reason for the clinic was that Ohio is on the threshold of getting clean streams, and water users wanted to know how they individually will be affected by the change. So what happened at the clinic set a pattern that other states may want to consider.

The big water user in Ohio is industry, and industry was there in force—to outline its problems of water supply, to describe its efforts at waste disposal, and to learn more of what's expected of it by pollution abatement agencies.

Plain talk prevailed. Speakers on the regulatory side of the picture laid their cards on the table: Present conditions are deplorable, and result from both industrial and municipal procrastination. Litigation will be avoided where possible, but some legal pressure will be applied. Strong incentive and hard cash are called for to do the necessary job. Impact on industry was considered in writing the new Ohio clean-streams law, and no severe handicap should be suffered. A "fighting retreat" from imposed regulations would be fruitless strategy. Laggards will be penalized.

Such a direct approach to one state's water problem as this frank airing of aims and intentions must surely have cleared away many misconceptions. It quite definitely pointed to paths that water users must follow to be within the law. And, most important, it showed the necessity for developing a regard for clean streams as a social responsibility. This development, already being aided by aroused public sentiment, will be fostered by understanding of the problem which clinics such as this can supply. Other states, hoping to get cities and industries to pitch in and do a job on pollution abatement, could also benefit from similar clinical examination.

Sure—We're Taking Orders for Reinforcing Steels!

Builders ready to start construction jobs can look to Ryerson for the steels needed for reinforced concrete construction—bars and accessories, spirals, wire mesh, and joist forms.

Some of our plants may, from time to time, be temporarily sold out of reinforcing bars for immediate shipment, but in the main you can count on us for job-scheduled deliveries of the steels you require.

You can count, too, on getting the usual complete Ryerson service—setting plans if needed, accurate cutting, bending and fabricating, with every piece metal-tagged for quick identification and placement.

Of course, reinforcing bars are a Class A Product; so it is essential that we receive an allotment from you, well in advance of delivery, in order to take care of your requirements promptly and completely.

There's a Ryerson plant near you and a Ryerson reinforcing specialist ready to work with you. So call on us for a lump sum or average pound price on your next job.

HI-BOND RE-BARS FOR GREATER GRIP

First of the new high-strength bars, Hi-Bond reinforcing gives stronger construction and increased resistance to the formation of tensile cracks. Hi-Bond's greater bonding grip is test-proven. Every bar meets or exceeds ASTM spec. A305. It will pay you to make Hi-Bond part of your plans for tomorrow.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND
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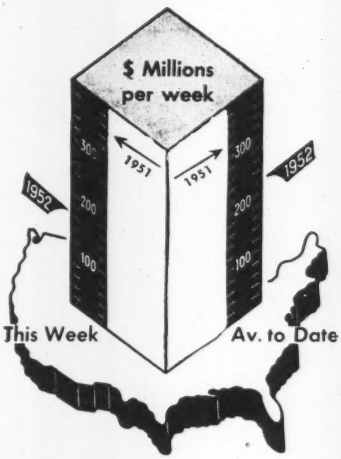
THE CONSTRUCTION WEEK



Contracts by type of work

	This Week	Cumulative 9 wks 1952	1951	% chge
Waterworks	$1.4	$45.4	$34.5	+32
Sewerage	3.3	32.4	58.2	−44
Bridges	3.8	40.4	48.7	−17
Highways	10.9	165.7	152.9	+8
Earthwork, Waterways	3.2	65.2	49.0	+33
Buildings:				
Public	27.5	253.6	450.3	−44
Housg., pub.	15.5	131.8	134.5	−2
Housg., priv.	34.9	447.1	395.3	+13
Commercial	3.9	69.2	136.5	−49
Industrial	28.6	495.8	1,211.8	−59
Unclassified	32.7	238.6	218.3	+9
Total	**$165.7**	**$1,985.2**	**$2,890.0**	**−31**

NOTE: Minimum size projects included are: Waterworks and waterways, $24,000; other public work, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR COST INDEX

Index Base = 100		1923	1926	1949
Constr. Cost	Feb. '52	549.26	264.03	115.14
Bldg. Cost	Feb. '52	406.05	219.50	115.42
Volume	Jan. '52	470	191	136

ONLY THE START—Tops on the National Production Authority's list for consideration to get bigger aluminum allotments are producers of building materials. From hugely expanded facilities, aluminum manufacturers are turning out more than defense production can absorb. So civilian fabricators will get more, NPA says—and the construction industry, which has always been the best customer for aluminum (ENR Nov. 22, 1951, p. 28) will get a healthy share.

CONTRACT SHUFFLE—Under prodding from Florida congressmen, the Air Force last week set aside a $5.4-million contract negotiated with J. A. Jones Construction Co. for construction of 26 barracks and four mess halls at Eglin Air Force Base, Fla., and ordered competitive bidding. Congressmen applied pressure on the Air Force after the Northwest Florida Contractors Assn. said it was "convinced" the project could be built "for less than $5 million."

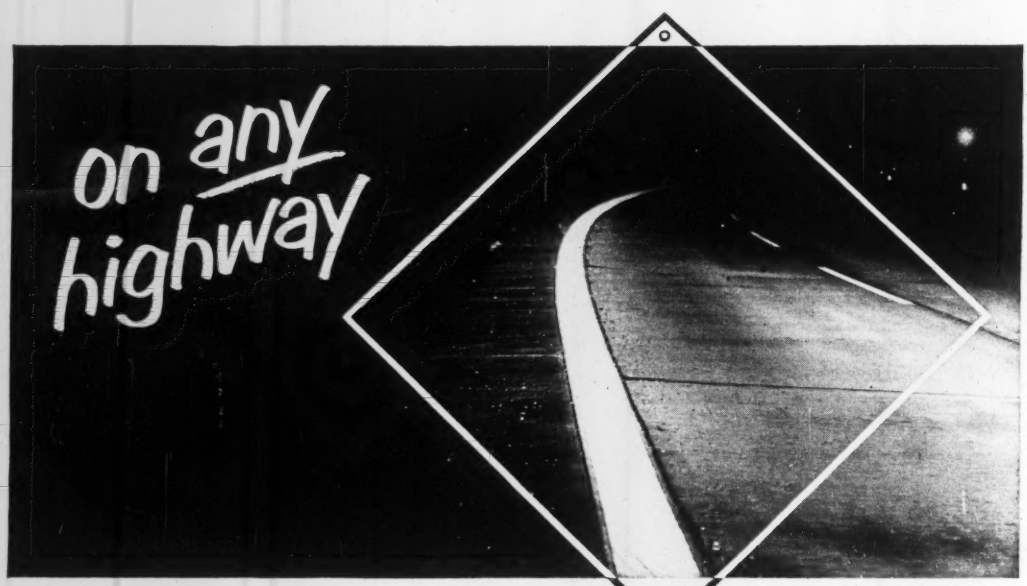
BRICK WALL—Over the strenuous objection of Senate Foreign Relations Committee Chairman Tom Connally, the committee started holding hearings this week on legislation to authorize the $818-million St. Lawrence Seaway and power project. Its resolution, Connally commented, "compels the committee to hold hearings but it does not compel it to act." He also predicted no approval would be forthcoming at this session.

ETERNAL TRIANGLE—Last week the Interior Department appealed to the courts to revoke a license issued by the Federal Power Commission to Pacific Gas and Electric Co., and the Fresno Irrigation District for construction of a hydroelectric project on Kings River in California. Interior opposes the development on the ground that it would conflict with the Reclamation's Central Valley project.

HOUSING ORDER REVAMPED—As submitted last week to the Construction Industry Advisory Committee, the new housing order follows closely the recommendations of the amended draft (ENR Feb. 21, p. 25). Self-authorization maximums are slightly more liberal than had earlier been proposed. They allow 1,800 lb of steel for a dwelling using steel water pipes. Copper allowances are 35 lb for wiring, plus 100 lb for tubing in houses with copper water systems. Builders may self-authorize up to half these amounts for alterations and additions to existing houses. The order probably will come out early in March, along with the new CMP Regulation 6.

IN THIS ISSUE—National Production Authority takes wraps off future building plans (p. 23). . . . Contractors liability is clarified in Comptroller's opinion (p. 25). . . . Story of a bridge that goes nowhere (p. 26). . . . Los Angeles' underground garage nears completion (p. 28). . . . Iowa highways are being rebuilt (p. 31). . . . Non-magnetic iron ore production is expanded (p. 34). . . . Asphalt membrane lines Columbia Basin canal (p. 29). . . . Point 4 goes to work in Jordan (p. 42). . . . A new inner loop beltway is proposed for Washington, D. C. (p. 45). . . . Wage-control enforcers crack down (p. 53). . . . No early decontrol of building material foreseen (p. 57). . . . Massachusetts plans a toll highway to meet competition (p. 96).

Largest safety signal



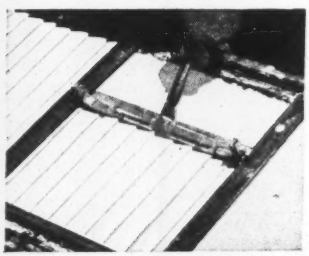
The gigantic "Curve Right" warning on this super-highway is *the curb itself*. It's a Concrete Reflecting Curb made with Atlas White Cement, and it clearly outlines the road ahead 24 hours a day.

Reflecting Curb is highly visible by day because Atlas White Cement makes it stand out in bright contrast to pavement gray. At night, the curb becomes a shining ribbon of white as thousands of corrugations reflect headlight rays back to the driver. And on wet nights, when good visibility is needed most, the wet reflecting faces become even more effective . . . outline the road even better.

Placement is fast and simple. One method is to pour an Atlas White Duraplastic* mortar mix on a gray cement base, screed to 1-inch thickness and score with a hand tool (pictured right). Contractors prefer Duraplastic* because its air-entrainment feature makes the mix more workable, more plastic; makes placement and scoring easy.

For more information write: Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

This Concrete Reflecting Curb on the Pennsylvania Turnpike near Philadelphia acts as a huge "Curve-Ahead" signal. It's made with Atlas White Duraplastic Air-Entraining Cement. Owner: Pennsylvania Turnpike Commission. General Contractor: L. G. Defelice and Son, Inc., North Haven, Conn. Curb installed by Polselli & Angelucci, Philadelphia.



*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS® WHITE CEMENT
For Concrete Reflecting Curb and Markers

ENR-RM-72

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

NPA lifts lid on construction plans

Approves projects totalling $218 million to go up during nine months after July 1

The National Production Authority last week authorized construction of 645 new religious and community building projects all over the country. Allotments of controlled materials will be made to these projects in the second half of 1952 and the first quarter of 1953.

Henry H. Fowler, NPA Administrator announced the authorizations as the first step in carrying out his promised policy of advance allotments for non-defense construction (ENR Jan. 24, p. 26). The projects can be started at once; they will get their steel and copper allotments in the third quarter of this year and in the two following quarters.

Valued at $218 million, the 645 buildings require 13,600 tons of structural steel and 1,153,000 lb of copper. The structural steel is included in a total carbon steel requirement of 44,000 tons for these structures. Materials have been earmarked in advance by the Defense Production Administration to take care of these needs.

In line with its stated policy, NPA selected projects that serve the public welfare or safety for its first authorizations. The list includes 446 churches; 110 municipal structures such as firehouses, jails and police stations; 29 YMCA's and boys' clubs, and 28 community buildings and civic centers.

The projects are being authorized now, Fowler said, to assure a solid basis for going ahead with architectural and engineering work and with the placing of orders for steel fabrication —as well as to provide employment for the building trades. Excavation and foundation work can be started immediately on the authorized jobs.

Industrial cutbacks

But if NPA was loosening up the cords on some phases of construction, it was tightening them on others. Mobilization officials have revised their estimates of the amount of plant expansion the country can afford this year out of our limited supply of materials.

The new estimate is down—below anything either industry or the government previously anticipated.

Chief effect of the shift in controls policy will be to extend the present hold-down on all plant starts except the most urgent defense plants throughout 1952. Industry had anticipated—with some encouragement from Washington—that the freeze on starts could be lifted earlier, perhaps in the second quarter, almost certainly after July 1.

That means, of course, that industry will have to pare back its own plans for expansion. A recent survey by the McGraw-Hill Dept. of Economics showed that industry expected to spend $21,175 million on new plant and equipment this year.

A substantial portion of this estimated spending was earmarked for new structures which industry hoped to get under way this year. But it's apparent now that most new plants, and even substantial additions to existing facilities, won't get started before 1953.

You can see that from the level of structural steel allotments for expansion in the second quarter. It was even more clear in estimates by controls officials of allotments for the rest of 1952. (See next page.)

• **Less steel**—In the April-June quarter only 265,000 tons of structurals will flow into plant expansion. That's 26% less than was allotted for the same purpose in the first quarter and 11% below the allotment for the last three months of 1951. And the controllers figure on even less in the last two quarters of this year—225,000 tons in each. That's just an estimate, of course, but NPA probably will stick pretty close to it.

And it's just as plain that the supply of structurals, though still far below pent-up demands, isn't the most important factor limiting industrial expansion. Military allotments were up over the first-quarter level but that accounted for only 50,000 tons of the 95,000-ton reduction in structurals for industrial expansion from the first to second quarter. The big gainer was the several reserves, chiefly for maintenance, repair and operating requirements. The reserves got 300% more structural steel than in the first quarter.

That points up the controllers' announced aim to keep construction materials out of the kind of structures that would increase demand for other metals to equip them. NPA particularly wants to hold down copper demand. Copper is vital in machinery of the type required for most industrial plants.

HENRY FOWLER will carry out the change in policy.

That's why more structurals were allotted for roads, schools and other items, as well as for maintenance, that won't require extensive machinery after completion.

Second-quarter outlook

NPA officials are beginning to act on warnings by mill men and fabricators that lighter shapes will soon be in easy supply.

And the mobilization chiefs have made it clear that the additional structural steel will be allotted to deferred construction projects—public, religious, institutional and commercial—rather than to new industrial jobs.

The requirements added up to 205% of the supply. For the current quarter, the ratio improved to about 182%. And for the second quarter to about 170%. Steel men still regard the stated requirements as inflated.

Allotments and NPA reserves of structural steel for the second quarter also come closer to the estimated supply of 1,425,000 tons. The amounts thus allotted and set aside exceed the

(*Continued on page 24*)

Steel allotments . .

(Continued from page 23)

supply by about 10%. Experience has shown that this is as much as can be allowed for "slippage" with the controlled materials plan in full operation on structural steel.

• **Advance allotments**—NPA will soon have final figures on estimated industrial requirements for the second half of 1952.

It also is compiling second-half requirements for military and atomic energy construction.

When these figures are added, the agency will know how much it can release of structural steel and other controlled materials in advance allotments to non-defense projects. NPA took its first step on these advance allotments last week—for the 645 religious and community building projects.

Self-certification is earmarked for a bigger slice of the second-quarter structural allotments. Total reserves for self-authorization, including MRO, amount to more than 115,000 tons. This set-aside greatly exceeds the total of less than 34,000 tons for the current quarter and less than 57,000 tons for the fourth quarter of last year.

DPA ALLOTMENTS OF STRUCTURAL STEEL

(In Tons)

General Claimant Agencies

Program	1952 2nd Qtr.	1952 1st Qtr.	1951 4th Qtr.
Dept. of Agriculture	8,910	4,000	10,000 (A)
Dept. of the Army (Civil Works)	12,870	13,000	14,000
Atomic Energy Commission	20,642	45,000	35,000
Civil Aeronautics Adm.	7,920	5,400	1,250
Dept. of Defense	220,628	171,000	149,075
Defense Electric Power Adm.	148,500	142,976	119,979
Defense Fisheries	218	.....	600 (A)
Defense Minerals Adm.	15,850	17,000	11,649
Defense Solid Fuels (Coke Ovens)	8,910	5,772	.....
Defense Solid Fuels (Coal Mines)	7,920	4,040	.....
Defense Transport Adm.	24,255	24,500	30,014
Federal Civil Defense Adm.	99	565	.....
Federal Security Agency			
Education	29,205	26,013	35,429
Hospitals	18,315	19,004	21,400
General Services Adm.	4,950	7,000	4,750 (A)
Housing and Home Finance Agency	7,425	10,500	17,000
Dept. of Interior	1,386	1,459	1,500 (A)
Maritime Administration	19,503	17,000	15,500
Office of International Trade and Mutual Security Agency	27,522	29,300	24,607
Petroleum Adm. for Defense	51,480	55,000	45,200
Bureau of Public Roads	70,600	56,000 (B)	105,000
Veterans Administration	3,366	5,472	4,000 (A)
NPA Industry Divisions			
Agr. Mach. and Impl. Division	18,070	16,000	15,000 (A)
Aluminum and Magnesium Div.	.....	.....	.....
Building Materials Division	5,346	4,560	4,500 (A)
Canadian Division	55,152	58,000	50,000
Construction Machinery Div.	32,800	36,254	30,000 (A)
Copper Division	36	.....	.....
Engine and Turbine Division	35,640	38,114	25,241
Facilities and Construction Bureau			
Commercial Construction etc.	7,425	10,033	15,337
Industrial Expansion	264,850	360,237	298,338
General Indust. Equip. Div.	62,438	71,559	55,000
Iron and Steel Division	17,127	33,000	.....
Lumber and Wood Products Div.	179	274	.....
Metalworking Mach. and Equip. Division	35,046	37,619	27,050
Mining Mach. and Equip. Div.	11,425	13,000	15
Misc. Metals and Minerals Div.	.....	.....	.....
Ordnance and Shipbuilding Div.	16,870	14,900	16,500
Railroad Equipment Div.	135,529	165,425	175,000
Scientific and Technical Equip. Division	1,236	410	100 (A)
Service Equipment Division	1,408	690	100 (A)
Water Resources Division	19,800	22,670	4,000 (A)
NPA Reserves	4,025	.....	.....
Other Reserves	111,604	.....	.....
MRO, Self-Certification, Field Cases, Small Users	.....	.....	.....

(A) Requirements committee recommendations, not specifically limited in program determinations.
(B) Includes 3,500 tons for Kansas flood relief.

• **Increases**—Several programs get increased structural allotments for the second quarter. The biggest: to the Defense Department for military construction, stepped up to more than 220,000 tons.

Highways also get a moderate increase of nearly 15,000 tons above the present quarter to 70,600 tons. But this allotment is less than one-third of the screened requirements submitted by the Bureau of Public Roads. NPA plans to allot larger tonnages to highways in future quarters.

As listed in the accompanying table, second-quarter allotments show an increase of more than 3,000 tons over the current quarter for schools and a small decrease for hospitals. The allotment for commercial and other projects under the Construction Centrals Division is also cut almost 2,600 tons below the present low level.

Among the programs receiving increased allotments are agriculture, civil aeronautics, electric power, coal mines, coke ovens and shipbuilding. Construction machinery gets less than in the present quarter, and railroad equipment takes a substantial cut in tonnage. Building materials are given a modest increase.

• **Cuts elsewhere**—Most of the other NPA industry divisions receive reduced allotments. The Water Resources Division is cut almost 3,000 tons below the current level to 19,800 tons. But the allotment to the Electrical Equipment Division is raised nearly 5,000 tons to slightly more than 9,500 tons.

Structural steel for apartment buildings is again reduced. The second-quarter allotment is cut to 7,425 tons, more than 3,000 below the present quarter. Civil defense takes a drastic cut to less than 100 tons, and the oil and gas program gets a smaller amount than in the first quarter.

NPA has already adopted as a principle that materials allotments made to any project in any quarter will be continued through succeeding quarters until the project is completed. In other words, allotments will be made on a project basis rather than on a quarterly-use basis.

Army untangles bid snarl

Comptroller General Lindsay C. Warren last week released his decision that John McShain, Inc., is not liable under a bid proposal that the firm submitted in response to an invitation to negotiate a contract for a construction project at Fort Ritchie, Md.

Of broad importance to contractors doing business with the government, the decision implies that a proposal entered for purposes of negotiation is not binding on the bidder until accepted by an authorized official of the firm.

Decisions by the Comptroller General are final so far as expenditures by the executive branch of the government are concerned. On that basis, the Army Engineers apparently are now free to award the Fort Ritchie job to another contractor.

Warren's decision does not preclude the Army Engineers from carrying the matter to the courts. But in Warren's opinion, they would not have a good case.

• **Situation clears**—The Warren decision clears up an earlier ENR report of the Fort Ritchie mixup, Jan. 31, p. 60. In a twelve-page letter to the Secretary of the Army, Warren pointed out that proposals for the Fort Ritchie job were invited from a number of bidders, with the understanding that negotiations would be conducted with those submitting the three lowest proposals to determine the final conditions and price. Invitations were dated Sept. 14, 1951, and proposals were received Oct. 2.

McShain submitted a surprisingly low bid of $6,578,425. The others ranged from $7,944,010 to $11,509,580. Because the McShain bid was so low, the second and third bidders were not interested in negotiating.

The District Engineer, Corps of Engineers, sent a formal notice to John McShain, Inc., stating that the low proposal was accepted and instructing the firm to proceed with the work. This notice was never signed and returned by the contractor, because of questions regarding acceptance of the contract.

John McShain, president of the corporation, explained soon afterward to the District Engineer—the contracting officer—that a mistake had been made in preparing the proposal in the short time available. Further, according to his affidavit, he had questioned the proposal and had allowed it to go in only on the basis of the negotiation understanding. He was willing then to undertake the work and absorb the loss because the firm already had another job under way at Fort Ritchie. But McShain made it clear that the contract would not be accepted until certain questions on wage rates and other matters had been settled.

Without warning, the Army Engineers then terminated McShain's going contract at Ritchie—purely as a convenience to the government. McShain asked to be excused from the second job, on the grounds that a contract never had been consummated.

• **Comptroller agrees**—The Comptroller General agreed with the contractor. He said the Army had a duty to inform McShain of the impending termination of the first contract. More fundamental, he pointed out, was the fact that the bidders had reason to believe the contract would be negotiated informally. Finally, the negotiations were not to be binding unless transacted with representatives of the contractor duly authorized to enter into a final agreement.

No such representatives had been present at the first meeting in the District Engineer's office, ten days after the receipt of proposals. McShain's general manager, who was there, was not authorized to sign contracts. Therefore, Warren concluded, the conversation that day did not amount to negotiation of a contract or have the effect of converting the contractor's proposal to a firm bid.

Warren also said the notice of award and notice to proceed issued the same day constituted no more than a firm offer on the part of the government to award the contract at the price quoted in the proposal. As such, it had to be accepted without qualification by the contractor for the contract to be consummated.

He added: ". . . Considering the ambiguities, uncertainties and confusion which attended the entire transaction, there appears no clearly sound basis for concluding that a contract was ever consummated or that John McShain, Inc., has incurred any liability under its bid."

Overseas air base construction probed

Senators investigating charges of waste of funds and manpower in construction of overseas air bases (ENR Jan. 17, p. 26) last week grilled the high command of the U. S. Army Corps of Engineers.

First on the stand before the Senate Defense Watchdog Subcommittee was Lt. Gen. Lewis A. Pick, Chief of Engineers. He was on the spot for: (1) payment of $3 million in wages before workers reached the "Blue Jay" project in Greenland; and (2) spending $1,280,000 on runways in North Africa that later were abandoned.

LT. GEN. L. A. PICK, Chief of Army Engineers, explains overseas construction.

Pay for the "Blue Jay" project, figuring out at rates as much as $12,000 a year for laborers and $17,000 a year for mechanics, was defended this way:

"This was hazardous work beyond anything ever encountered in construction," Gen. Pick said. It was necessary to transport the workers by both ship and airplane and the ships needed icebreakers to get through.

"Blue Jay" workers were guaranteed a 70-hr work week with everything over 40 hours at time and one-half. "We had to establish a wage scale that would attract the workers to go to a place where hardly anyone had ever been before."

• **Lost runways**—The difficulty with runways in North Africa stemmed from rush construction requirements, according to the testimony.

Brig. Gen. J. C. Hardin told the senators that Air Force plans called for simultaneous starts on five bases in French Morocco in 1951, but it was possible to start work on only two of them, located at Sidi Slimane and Nour Asseur.

Gen. Pick pointed out that much of the loss occurred where bases had been planned by the Air Force, then plans were changed. He gave a lecture on Nour Asseur where "construction failure" resulted in loss. Pick said that when air strips and parking aprons were hit by heavy rains, the asphalt surface still under construction caved in under tests.

NO PLACE TO GO—Waiting for the Missouri to flow under it is this bridge at Decatur, Nebr. The steel portion is 1,950 ft, and the overall length including approaches will be 4,420 ft. Right now one end of it drops off into space. That's the river skirting the far end of the bridge. (Wide World photo.)

Bridge waits to cross river

The $2-million "bridge-without-a-river" built at Decatur, Neb. may carry its first toll-paying vehicle this summer.

Six years ago the Missouri River cut a new channel near Decatur, so the bridge was built over dry land, in anticipation of the day when the river would be put back under the span, where it belongs. The bridge is complete—toll house and all—except for its east approach.

While builders saved $400,000 in construction costs that way, the price tag on the job of moving the stubborn stream back into its proper channel has climbed to $7.9 million. Coupled with the revised estimate from Army Engineers was a warning that this figure will undoubtedly increase with further delay in getting the work under way. Continued worsening of the channel deviation and a shortage of funds have prevented the Army Engineers from tackling the channel moving job.

W. W. Small, mayor of Decatur and chairman of the Burt County Bridge Commission, discussing the possibility of opening the bridge to traffic this summer, commented that there is always a chance that the unpredictable river will "revert back to where we want it without any work." This probably would happen, if at all, in the spring with its high water and ice gorges.

Col. H. J. Hoeffer, Omaha district engineer, explained that putting the river back under the Decatur bridge for keeps involves stabilizing the channel for a distance of 16 miles above the bridge.

• **Question of money**—President Truman is asking Congress for $5 million for work between Sioux City, Ia. and Kansas City, Mo. for the fiscal year beginning July 1, but with money for the Decatur work is not in sight. Funds available during the current fiscal year totaled $3,750,000.

Construction work on the bridge which spans the river between Decatur, Neb. and Onawa, Iowa began two years ago. The project is financed by self-liquidating revenue bonds totaling $1,970,000—original estimate of the cost of the bridge—and the bond issue has been sold.

There is no complaint on the part of the citizens of the Nebraska town over the prospect of paying tolls to use the bridge. Mayor Small said the people of Decatur are pleased with the project and the contemplated convenience the bridge will afford. Location of the bridge was approved by the Army engineers.

Senator Guy M. Gillette is seeking a special appropriation to cover the cost of "stabilizing" the river for the 16-mile stretch.

Housing projects to use private building money

Private capital is starting to play a more important role in New York City's slum clearance plans.

Last week the City Planning Commission approved the first four large housing projects proposed by the Committee on Slum Clearance Plans. To total nearly $84 million, the projects will be constructed mainly with private funds.

The city will acquire the sites for the four developments and sell them to private builders for clearing and construction. The federal government will reimburse the city for two-thirds of any loss it incurs in acquiring the sites.

Included in the approved projects is the controversial $37.5 million West Park, formerly Manhattantown, project. Others are the $16.5-million Corlears Hook, the $15.5-million Harlem and the $14.4-million North Harlem. They will accommodate a total of 21,000 persons.

Army stops bridge job conflicting with dam

Construction on the $2-million The Dalles Bridge across the Columbia River has been stopped by action of the U. S. Army Corps of Engineers because it would interfere with construction of the $350-million The Dalles Dam (ENR Dec. 20, 1951, p. 27).

Using eminent domain proceedings, the Corps of Engineers halted work with piers constructed and steel partially fabricated—including a main 576-ft cantilever span. The bridge was being built by Wasco County, Ore., with funds from a special bond issue. It would provide a highway link between South-Central Washington and North Central Oregon.

Col. Thomas H. Lipscomb, Portland District Engineer, said the Secretary of the Army issued Wasco County a permit to construct the bridge on March 17, 1950, even though all parties were fully cognizant of future plans for construction of the dam and after the county had made substantial revisions in its original plans.

The dam had not yet been authorized by Congress and the Army had no power to deprive citizens arbitrarily of their right to erect the bridge as long as navigational requirements were met, Col. Lipscomb said. Now the war emergency has created an urgent need for power in the Northwest.

• **New plans**—Changes in the alignment of the dam spillway, made since the permit was issued, have made construction of the bridge impossible in its present location, and the dam takes priority according to Col. Lipscomb.

Future of the bridge is uncertain and will depend on action by the Federal Courts and by Congress. The bondholders could be refunded their investments with accrued interest—but the county would be deprived of the bridge.

The District Engineer's staff and the Tudor Engineering Co., consultants to Wasco County, are studying other solutions. The bridge may be moved a mile downstream with additional costs plus interest charges paid by the U. S. government. This would use the same steel now being fabricated by Judson-Pacific-Murphy in Emeryville, Cal.

HOLING THROUGH—Burton F. Sanders (center), project manager for Merritt-Chapman & Scott Corp., and George Murphy, resident engineer for Parsons, Brinckerhoff, Hall & Macdonald, swap a handshake through the opening burned in the last steel bulkhead in the tunnel now under construction beneath the Elizabeth River between Norfolk and Portsmouth, Va. On left is Thomas P. Thompson, vice-chairman and executive director of the Elizabeth River Tunnel Commission.

Underwater tunnel 'holed through'

Sixty-five feet below the surface of the South Branch of the Elizabeth River, Va., last week a hissing stream of sparks flew from the last bulkhead in a new traffic tunnel.

Minutes later representatives of the contractors and consulting engineers reached through from opposite sides for a warm underwater handshake. (See photo.)

This brief ceremony marked "holing through" of the 3,400-ft tunnel phase of a $23-million under- and over-water expressway project that will link Norfolk and Portsmouth. The tunnel will tie into a bridge Tidewater Construction Co. is now building over the East Branch of the Elizabeth (ENR Nov. 16, 1950, p. 44).

The holing through took place just four days short of 11 months since the first of seven 300-ft long sections that comprise the underwater core of the tunnel was sunk into position in its deep trench in the bottom of the Elizabeth.

House group urged to plan long-range road program

Congressmen, continuing an inquiry into the federal money requirements for highways in the next fiscal year (ENR Feb. 14, p. 43), got a new slant from the American Road Builders' Association last week.

Lt. Gen. Eugene Reybold, U.S.A. retired, the association's executive vice-president, told a House Public Works Subcommittee a federal 10-year highway construction program costing $30 billion was necessary "to catch up on the present backlog of highway deficiencies."

He urged the group to formulate some definite long range plan rather than continue spending different amounts each year without a known overall objective.

Canada names engineers for St. Lawrence power

A board of engineers has been named by the Canadian Government to plan for joint construction of power facilities in the international section of the St. Lawrence River under the plan outlined by President Truman in his message to Congress relating to the St. Lawrence Seaway and power project (ENR Jan. 31, p. 27). The board is to cooperate with some "appropriate agency in the United States" in applying to the International Joint Commission for authority to undertake the power aspect.

Heading the engineer board is R. A. C. Henry, executive vice-president of Marine Industries Ltd., Montreal. Other members are R. L. Hearn, general manager and chief engineer of the Hydro Electric Power Commission of Ontario—which would build and operate the power facilities on the Ontario side of the river—Rene Dupuis of the Quebec Hydro Commission, Guy A. Lindsay, director of the St. Lawrence Seaway Branch of the Department of Transport, and Norman Marr, chief of the Water Resources Division of the Department of Resources and Development, both of Ottawa.

NEWS BRIEFS

• **Phone expansion**—To finance heavy construction, American Telephone and Telegraph Co. is planning to undertake the largest program of private financing ever to bid for savings of private investors. It proposes to add $550 million to its capital structure through the sale of convertible debentures. . . . To push its post-war construction program close to the $400-million mark, New Jersey Bell Telephone Co. has filed a new $70-million financing program.

• **Hudson River bridge**—The New York State Department of Public Works reported that preliminary studies justify a $17.8-million bridge across the Hudson River in the Newburgh-Beacon area.

• **Cleanup offer**—Arkansas Society of Professional Engineers has offered technical services of a five-man committee to any responsible citizens group which tries to clean up state highway administration abuses (ENR Feb. 21, p. 25). ASPE aim is general election approval of a comprehensive law replacing more than 300 highway department statutes.

• **AGC vs. Steelworkers Union**—The Associated General Contractors last week protested to the Wage Stabilization Board against the proposal of the United Steel Workers of America to prohibit steel companies from "contracting-out" maintenance, repair and construction work.

• **Speedy appropriations**—Army Engineers have been able to save $4 million from the total cost of the multipurpose hydroelectric project at Buggs Island, Va., because of rapid and steady appropriations by Congress. It cuts the cost of the project from about $88 million to $84 million, according to testimony before a House Appropriations Subcommittee now weighing a $6.8-million appropriation to finish the job.

• **Wash out**—The deluge of more than 100 damage suits that threatened to wash out $2 million from New York City's treasury as a result of its rain-making efforts in 1950 was sidetracked last week. Suits were dismissed because the summonses and complaints served had omitted the city's name from the title in the action, and had named city officials. Action cannot be reinstated because a 13-month statute of limitations for damages against the city expired last month.

THREE FLOORS OF UNDERGROUND PARKING are being provided by construction of the Pershing Square garage in the heart of downtown Los Angeles. Work is underway at roof level in background, on first and second subfloors in foreground.

Los Angeles gets an underground garage

NEARING COMPLETION in downtown Los Angeles is a 2,000-car, three-level, underground garage—Los Angeles' answer to the vexing downtown problem that plagues many cities. It has been undertaken entirely by private financing under a 50-year franchise, with the structure reverting to city ownership at the expiration of that period.

Ground breaking ceremonies were held Feb. 1, 1951, and construction is scheduled for completion on June 30, this year. Total investment in the project is $5,000,000. Actual construction cost amounts to $2,000 per parking stall.

Designers of the project have attempted to achieve the utmost in operating efficiency. For example, there is absolutely no interference between cars entering and leaving and pedestrian traffic. This is accomplished by providing eight entrance and exit ramps paralleling the four adjacent streets, and by setting the sidewalks back of these ramps.

• **No traffic blocks**—These block-long ramps overcome another objection frequently encountered since they provide ample off-street "storage" areas for temporarily holding entering cars during peak rush hours. They also permit easy mixing of traffic leaving the garage with street traffic.

The streets at each end of the garage are one-way. Connecting to a freeway now under construction five blocks west, they will facilitate travel to and from the garage.

Another operational feature is that owner-drivers will take their cars to the floor on which they are to be parked—that is, unless they require washing, lubrication or repair. Below the first floor drivers will use six two-lane-wide spiral ramps (85-ft exterior diameter) that connect the first subfloor with the second and third subfloors. Travel on these ramps will be "one-way."

Each parking floor is divided into two completely independent operating units—making six in all for the garage. Thus, a patron in leaving his car in one of the six units will return to the same unit to pick it up. Foot travel from lower levels to ground level is by means of moving stairs.

Parking areas are laid out, using a basic 27-ft module. This permits parking of three cars abreast between 26-in. dia columns.

• **Financing and background**—The project is one that has been aggressively promoted for a good number of years. Main driving force behind it was the Downtown Business Men's Assn. trying to prevent downtown blighted conditions. This group got the city to offer a 50-year franchise on the Pershing Square site provided a suitable structure of acceptable capacity was constructed and the park replaced to the satisfaction of the city. One or two initial attempts did not attract any bidders on the franchise. Terms require an annual rental fee paid to the city with city taking title at the expiration of the 50-year period.

Finally a corporation called City Park Garages, Inc., was formed with two construction companies as primary owners—namely, the Ford J. Twaits Co. and the Morrison-Knudsen Co., Inc. A minor interest is held by the

System Auto Park . . . who will operate the garage. Ford J. Twaits is president of City Park Garages, Inc.

• **Structural design**—The underground building is of reinforced concrete construction. Flat slab design with 5½-in. thick floors is used. Actually, only a little more than one-half of the floor area is of this minimum thickness because of the wide flat-cone-type drop panels over the columns. These panels taper from a 16½-in. thickness at the column to the 5½-in. slab thickness 9 ft from column centers. The roof slab is proportionately thicker due to the added weight of earth backfill for landscaping. It tapers from a 27-in. thickness at the columns to a 9-in. thick slab.

Computing stresses in a slab of this type is virtually impossible because of the tapering column capital section, but an "exact" slab analysis was obtained by photo-reflective methods developed by the Presan Corp. of Los Angeles (ENR July 7, 1949, p 70). These methods involve the making of an accurate mirrored model of the floor slab together with the columns, ramp, stair and escalator walls that restrain the slab. The model is "loaded" by air pressure and the deformation measured. In the Los Angeles underground garage, the model was accurate even to the haunching of the floor slab.

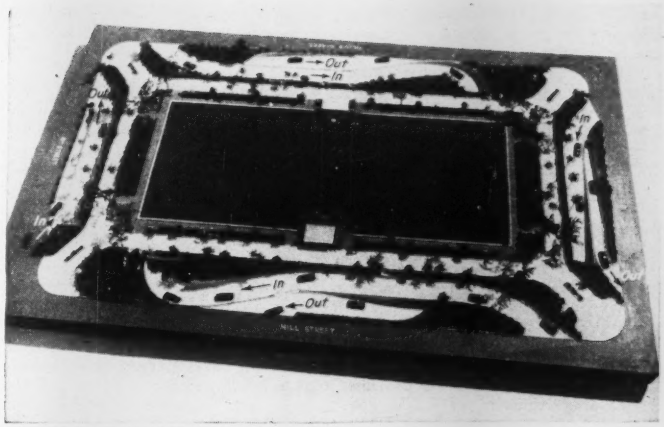
Analysis by the Presan Corp. provides the designer with contour charts of equal bending moment. From this, the structural designer can detail the required slab steel.

By using this method of analysis, the engineer was able to reduce the slab thickness from the 8 in. it might have been to 5½ in. This reduction is possible because the "exact" analysis permits the design to be based on the elastic deformation of the slab.

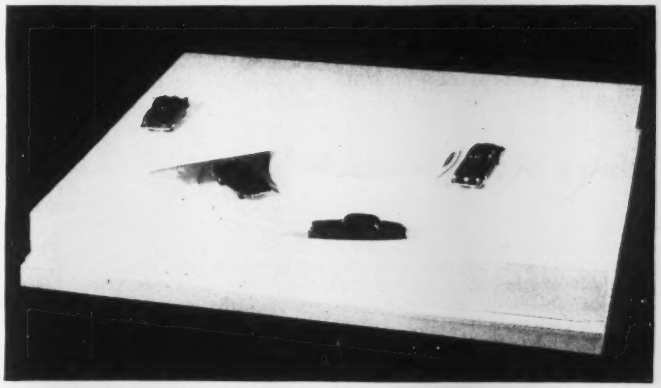
• **Ground water precautions**—Because the area has a past history of ground water troubles, the designers have leaned over backwards to provide safety valves guarding against damage from possible saturated conditions. They have done this at a relatively minor expense.

First of all, in the base slab they have provided a number of 18-in. square holes. These holes are sealed off, but are so arranged that should an uplift pressure develop the plugs will be pushed out. Material uplifted through these holes can then be removed and further steps taken to alleviate the condition.

Groundwater that might develop is to be removed by combining the below-base-slab ventilation ducts with a ground water removal system. Pipe sleeves penetrate the ventilation duct



IN-AND-OUT RAMPS are situated in pairs paralleling each of the boundary streets. This eliminates interference with pedestrian traffic.



SPIRAL RAMPS permit owner-drivers access to any of three floors. Six such ramps are provided so that traffic on any one is in one direction only.

TIMBER SHORING being set to fit the flat cone capitals at the columns. The shores supported steel pan forms.

walls at about 12½-ft intervals. Water entering the ducts drains to a sump for removal.

The thinking here is that any water that would enter the ventilation ducts would not interfere in any way with their functioning for ventilation purposes.

These ducts vary from a section 2 ft square at the extremities to a 10x6-ft section at each of the four fan rooms.

As a further precaution a perforated-type perimeter drain extends completely around the outside of the structure.

Pumping capacity amounting to 3,400 gpm for removal of groundwater is being installed with the initial construction. Space is provided for a total capacity of 7,200 gpm should it prove necessary at a future date.

A standby diesel power plant is being installed for emergency lighting and pump power.

The ventilation system will provide six changes of air per hour with fans both below the lower floor for fresh air and fans at roof level for exhaust. Much of this mechanical equipment is located in the core of the spiral access ramps.

• **Nighttime excavation**—During the early stages of construction more than 200,000 cu yd of material had to be removed from the site. Here the contractor was caught between two forces—one the jam of daytime traffic and the other the proximity of the Biltmore Hotel located just across the street. The hotel people protested all-night operations.

A compromise was reached whereby excavation work was accomplished during the hours between 6 pm and 2 am. Material was hauled about 4 miles to Chavez Ravine where a deep gorge is being reclaimed for use. Sixty days were required to remove the material.

• **Concrete work**—Forming was entirely by timber shoring supporting steel pans. Each floor area amounts to some 210,000 sq ft which means about 600,000 sq ft of steel pan area. To form this up the contractor had available 90,000 sq ft of steel pans.

Schedule called for two major pours of about 300 cu yd each a week. All concrete was brought to the job in 6½-cu yd truck mixers and distributed by powered concrete buggies. Concrete trucks arrived at about 5- to 8-min headways for the larger pours.

Forms were stripped at the end of 7 days if reshores were used. Reshoring in this case called for installing posts at the corners of the cone-like drop panels. Where no reshoring was done the forms were stripped at the end of 14 days.

Contractors building the garage for City Park Garages, Inc. are Ford J. Twaits Co. and Morrison-Knudsen Co., Inc., as co-venturers, with Ford J. Twaits Co. sponsoring the project and T-S Construction Engineers as associates. R. H. Kirkman is project manager and C. A. McMahon is project superintendent.

The project was designed by Stiles Clements Associated Architects and Engineers with Murray Erick Associates as consulting engineer for structural design. The consulting engineer also assisted in the functional design of the building.

Idaho highway work gets shake-up

Highway work in Idaho is being completely reorganized under a new highway act passed last year under the leadership of a new state highway engineer selected by the three-man highway board set up by that act.

E. V. Miller, former deputy highway engineer of Arizona, is the new chief engineer. Miller had been with the Arizona Highway Department since 1923 and had been active in the affairs of both the Western Association of State Highway Officials and the national group.

Under the new act, Mr. Miller has undertaken a sufficiency study of the entire highway system to determine how the available funds are to be allocated for new construction. He also has under way a complete reorganization of highway department personnel. The new act specifically prohibits the board or any of its employes from taking an active part in any political party and gives the board broad powers to eliminate inefficient employees and set up a rating system for employees.

Miller is asking the legislature for a general upward adjustment of engineering salaries.

• **Highway needs summarized**—Also inaugurated by Mr. Miller is a program of reporting to the people of Idaho on highway matters. Current state highway needs, he states, amount to $14 million. As no property or ad valorem taxes go into the state highway fund, these needs must be met out of motor-vehicle tax collections and federal aid.

This year these collections are expected to amount to $15 million. Of this money, Mr. Miller states that $4 million must go to the counties under the new law, and they in turn must submit their programs to the state highway department for approval. Half a million will go to incorporated towns and cities, leaving $10.5 million for the state highway department. Deducting $3 million for maintenance of the 5,000-mile state system, $1.5 million for administration and equipment, and $1 million for capital requirements, will leave $6 million to pay for contracts under way, for surveys, and to match federal aid.

Mr. Miller reports the state can plan for an annual construction program of about $10 million, which would mean that current deficiencies cannot be met in less than 14 years.

E. V. MILLER, center, is Idaho's new state highway engineer. Two members of the state's new highway board are shown with him: W. Fisher Ellsworth, left, and Roscoe Rich, right, board chairman. The third member of the board, Leonard K. Floan, was absent when the photo was taken.

OLD PAVEMENTS on the verge of failure are . . .

. . . PATCHED AND RESURFACED, but are not widened.

Stage reconstruction saves Iowa highways

IOWA FOUGHT A BATTLE of survival last year to save 606 miles of its important highways from complete destruction. Lacking sufficient funds for complete modernization—and unable to secure enough steel to widen or replace existing bridges—the State Highway Department did the only thing it could. It resurfaced the old 18- and 20-ft pavements without widening them; primarily to prolong their life and provide traffic with a smooth, travelable roadway.

Base patching, of course, was done where the old pavement was broken so badly that it could not carry traffic when topped with 3-in. of asphaltic concrete.

• **Stage 1 only**—The entire program is, in reality, Stage 1 only of the over-all plan for the "stage reconstruction" of the 606 miles of portland-cement concrete pavement. Succeeding stages of reconstruction such as pavement and bridge widening, culvert lengthening, and improvement of grade and alignment will be accomplished as fast as money, materials and men become available.

Surveys made early last year indicated that 632 miles of pavement on the primary system were so badly battered by traffic and deteriorated with age as to require resurfacing or reconstruction immediately. In the final analysis, however, this figure was cut to 606 miles due to substantial lengths of sections of old pavement in the proposed program being in perfectly good condition; with no necessity for resurfacing at the present time.

• **Cost $15,000 per mile**—At the end of the 1951 construction season 153 miles of pavement had been resurfaced and an additional 453 miles placed under contract to be resurfaced as early as the weather permits in the coming spring. This will complete the $9,000,000 resurfacing program which averaged $15,015 per mile, including base patching.

The 606 miles of resurfacing contracted last year at a cost of $9,100,000 was let under a total of 35 contracts. The longest project was 40.4 miles. Three projects were between 30 and 40 miles in length; 8 were between 20 and 30 miles; 11 between 10 and 20 miles; and 6 were less than 10 miles long.

This huge resurfacing program did not interfere, to any appreciable extent, with the state highway department's regular $48,000,000 primary and farm-to-farm highway construction and reconstruction programs during 1951. No surveys were required. Plans were simple and easily prepared. It required relatively few field engineers, while asphalt was in plentiful supply.

Although the major portions of the old pavements were 18 ft wide, with but a few exceptions, they are located on heavy traffic truck and bus routes. In fact, 70% of the resurfaced pavement is located on major cross-state routes such as U. S. 6, U. S. 30, and U. S. 69.

• **Unsound aggregate blamed**—Failure of these old portland-cement concrete pavements—built between 1921 and 1937 and having an average age of 23½ years—is attributed to the poor quality of limestone aggregate used in their construction.

This crushed limestone was inspected and tested before being used; meeting all specification requirements and passing all then known tests for concrete aggregates.

But service records of the pavements were disappointingly poor. After 12 to 15 years of exposure to heat and cold, wetting and drying, freezing and thawing—and the constant pounding of traffic—the pavements began to deteriorate rapidly. Needless to say, the state no longer uses crushed limestone from the quarries that furnished this particular aggregate in question.

• **Couldn't widen bridges**—Iowa's decision to prolong the life of this 606 miles of pavement by patching and resurfacing only, was based on many factors. To widen the pavement without widening the bridges accordingly would develop death traps at the bridges. And the state was unable to secure enough steel to widen the structures.

To do a complete job of modernizing the stretches of old highways would have required lengthening of culverts, widening or rebuilding a large number of bridges, as well as the widening and resurfacing of pavement.

In some instances a first class job of rehabilitation would call for new construction such as widened roadbeds for safety, or even new pavement on new location to reduce grades, improve alignments and increase sight distances.

In the final analysis the state did not have sufficient funds, materials, engineering manpower, labor, and possibly contractor equipment, to do a complete job of modernizing as promptly as it should be done

• **Surfacing methods**—Construction methods of applying the hot-mix asphaltic concrete followed generally accepted practice. Binder and surface

TYPICAL ASPHALT PLANT is this 90 ton-per-hour portable batch-type plant of Fielding & Shepley, contractors, St. Paul, Minn., for their 17-mile resurfacing contract on U. S. Highway 30 between Ames and Cedar Rapids.

courses—each 1¼ in. thick—were applied to only one lane of pavement at a time; leaving the other lane open to traffic at all times.

Binder courses—except in special instances—were not placed more than two-miles in advance of surface courses; and specifications prohibited the placing of any leveling or binder course after Nov. 1.

As a safety precaution, all contractors were required to organize their work so that the entire roadway would be available to traffic and free of any construction equipment at the close of each working day. This meant that no more hot asphaltic concrete mixture could be spread than could be finished and opened to traffic in daylight hours of the same working day.

Contractors used both continuous and batch-type asphalt plants set up near their projects. Wherever practicable they began placing each strip of binder or surfacing at points on the project most remote from the mixing plant and worked toward the plant. This obviated the necessity of asphalt trucks using the single lane of traffic past the paving operations.

• **A typical project**—One typical project in the program was a 27-mile stretch of State Route 150 leading northwest out of Cedar Rapids. This old 18-ft pavement was patched at a cost of $2,000 per mile; then topped with 3 in. (normal thickness) of asphaltic concrete at a cost of $13,000 per mile.

Depressions in the old pavement were filled and rough spots smoothed up with asphaltic concrete. Badly broken areas were cut out and replaced with new concrete. The entire pavement was given a primer coat of RC-0 asphalt; then covered with two 1½-in. layers of asphaltic concrete. Considerable of Iowa's concrete pavement have 3-in. high lips or curbs along each edge. These curbs were not removed, since the 3-in. of asphalt filled them.

Highway engineers estimate that the $15,000 per mile cost of patching and resurfacing this 27 miles of pavement was about 20% to 25% of the cost of a complete rehabilitation and modernization job. They also estimate that 80% or more of the resurfacing on this project will be retained in the highway when it is completely reconstructed at some future date. This applies to the other resurfacing jobs, with varying degrees of percentages.

• **Not much pumping**—The problem of undersealing the old pavements to prevent pumping during wet weather was virtually non-existent. Highway engineers point out that Iowa has about the same subgrade materials and climate as neighboring states which are bothered with considerable pavement pumping. However, it does receive less rainfall on the average than the other states.

This leads to the conclusion, by some of the highway engineers, that the relatively low incidence of pavement pumping is due to the fact that for many years Iowa consistently built thicker concrete pavements than did neighboring states. Several of the old pavements resurfaced had cross-sections of 10-7-10-in. depths. Others had an 8-in. uniform thickness.

• **Dense graded binder**—As shown in the accompanying table of aggregate gradation, Iowa uses a dense-graded binder course as well as a standard dense-graded finishing course. This costs only a little extra yet produces a binder that is more resistant to the infiltration of water than an open-graded mix. There also is less likelihood of the asphalt stripping off of the aggregates.

• **Engineers in charge**—Iowa's 606-mile, $9,100,000 resurfacing program was conceived by Chief Highway Engineer F. R. White, and carried out under his general supervision. Bert Meyers is materials engineer for the department, and C. L. Gleason is construction engineer. District engineers in charge of the work include: W. W. Wickham, Ames; R. R. Zack, Mason City; Earl Capel, Sioux City; Virgil Butler, Council Bluffs; W. J. Smith, Ottumwa; and J. A. Paulsen, Cedar Rapids.

GRADATIONS OF TOTAL AGGREGATE IN ASPHALTIC CONCRETE

(Percentage by weight passing each sieve)
Mixture size designations:

	Binder Course							
	Leveling course				Finishing course			
	1-in.		1 ½-in.		¾-in.		½-in.	
Sieve size:	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
2-in.	100							
1 ½-in.	98	100	100					
1-in.		100	98	100	100			
¾-in.	60	85		100	98	100	100	
½-in.			60	85		100	98	100
⅜-in.	40	60			65	85	75	100
No. 4			40	60	45	65	50	70
No. 8	25	40	30	45	35	50	40	55
No. 30	15		17		19	34	21	38
No. 50	10	20	11	23	13	26	15	29
No. 100	4		5		6		7	
No. 200	2	6	2	7	3	10	5	12
Basic bitumen % by weight of total mix:	5.0		5.5		6.0		6.5	

Big savings in bolting high-stressed structural joints, states expert!

$160,000 a year in maintenance . . . $440,000 a year in erection . . . can be saved on railroad bridges, and other high-stressed structures.

How? By substituting high-strength bolts (with hardened washers) for rivets. Thus estimates E. J. Ruble, Structural Engineer, research staff, A.A.R.

He proved, in actual field applications, that high-strength bolts are not only more economical, they *stay tight longer than rivets* in joints subjected to the same vibrational loading.

What's more, there is less maintenance. Erection crews can *bolt* faster (cutting construction time), safer, with less noise . . . offsetting the initial higher cost of bolts (the total *assembled* cost of a rivet may run as high as *thirty* times the total *assembled* cost of a bolt in the same connection).

The Research Council on Riveted and Bolted Structural Joints recommends quenched and tempered steel bolts to A.S.T.M. Specification A-325, when designing joints for assembly with bolts.

Address R B & W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."

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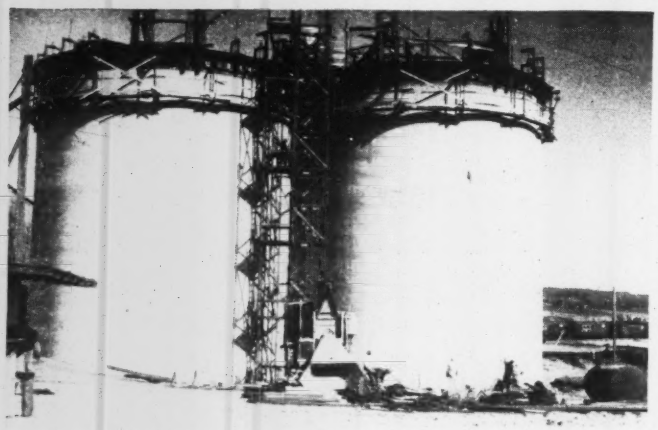
107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

Construction for steel: Jones & Laughlin gets set to process non-magnetic ores



IMPROVED SLIP FORM technique was feature of expansion at upstate New York iron mine. These twin silos will hold crushed ore from pit.

Iron-ore production expands

As TODAY'S PINCH on high-grade midwestern iron ores tightens, the American steel industry is not only going abroad for ore, it is paying more attention to other new domestic sources.

One of these is an iron mine at Benson Mines, N. Y. There, in the Northwestern Adirondacks, Jones & Laughlin Steel Corp. is expanding annual capacity from 1,000,000 tons of concentrate to 1,300,000 tons per year.

The fact about this expansion that captures popular fancy is that the 300,000-ton increase is designed for the concentration of previously-unavailable non-magnetic iron ores. New concentration techniques had to be developed.

For a construction man the expansion holds an added attention-getter: silos for increased ore storage were built with slip forms that were raised with hydraulic jacks—an improvement over jacks ordinarily used.

• **History**—The Benson Mines property first was opened up in 1897. It operated intermittently until about 1907, opened briefly during World War I, and became a Jones & Laughlin operation in 1944. Because the hard-rock ore is low-grade, it is necessary to crush it, extract iron-bearing fines and sinter them for effective blast-furnace use.

Magnetic ores (magnetite) are separated electromagnetically, the crushed fines being passed in water suspension underneath an endless belt with a magnet above the belt. The iron-bearing fines cling to the belt and are stripped off as a sludge. The other fines remain in suspension, passing off to be pumped to a tailings pile.

To handle non-magnetic ores (martite) a gravity separator has been developed. Fines-bearing water flows down a spiral channel at a rate that deposits heavy material (iron-bearing) to the inside, washes light fines along the outside and out to discharge. Portals in the inside of the spiral permit removal of iron-bearing sludge.

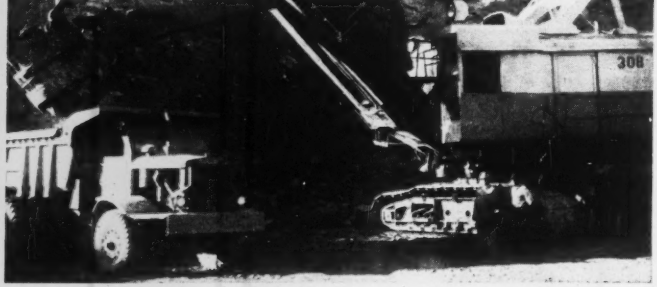
The present installation performs separation in three stages. There are 80 5-turn "rough" or primary spirals, 40, 5-turn "cleaner" spirals and 40, 3-turn "re-cleaner" spirals.

• **New construction**—An important element of new construction at Benson Mines is the concentrator building addition, to house the non-magnetic separators. This building also houses additional magnetic separation equipment, as well as the grinders (rod mills) to supply the new separators and sludge dewatering equipment to prepare the product for the sintering plant.

The following construction also goes with Benson Mines expansion:

1. Enlarging the belt conveyor between the primary-secondary crusher plant and the fine crusher building. Now 48-in. 750 ft long, the old belts were 36 in. wide and 375 ft. long, in series. Work involved widening the conveyor's rock tunnel, putting in new troughing idlers while the old conveyor continued to run, and finally taking the 36-in. conveyor out of service for 3½ days while the new belt was installed. (The primary and secondary crushing equipment were big enough to handle the increased load.)

2. Increasing sintering plant capacity by adding a sintering line to two already in operation. In the sintering plant, concentrates are mixed with coal, fed onto a long chain grate, and



HEAVY EQUIPMENT handles ore in hard-rock pit at Benson Mines. (One of three pits is on property owned by Newton Falls Paper Co., a McGraw-Hill subsidiary.)

MINE LOCATION—Benson Mines, N. Y., is in northwest part of Adirondack Mountains, near Watertown, N. Y.

Construction for steel

This is the sixth of a series of articles describing construction problems incidental to America's present expansion of its steel capacity.

fired by oil. By the time the mixture reaches the end of the grate, combustion is complete and particles of concentrate have been fused into iron-ore clinkers big enough for satisfactory blast furnaces use. Falling off the grate, the sinter drops into a hopper, then into a railroad hopper car awaiting below.

3. Increasing water supply, by impounding a small stream. (It takes about 500 gal of water to process a ton of ore.)

4. Developing a new tailings pile, by laying a pipeline to a new waste area and building a berm to provide a settling basin.

5. Providing increased storage capacity for raw fines, concentrate and coal.

New storage for raw fines is being provided in two ways: by an outdoor storage pile fed by a shuttle conveyor and unloaded by a conveyor in a reclaiming tunnel (live storage 20,000 tons); and by two new silos, each 51 ft dia and 74 ft high. These silos hold enough raw fines to keep the plant going at its new capacity for 32 hours without replenishment from the pits and primary crushers.

A similar time cushion is provided at the sintering plant, by another battery of new silos, 19 ft dia and 43 ft high.

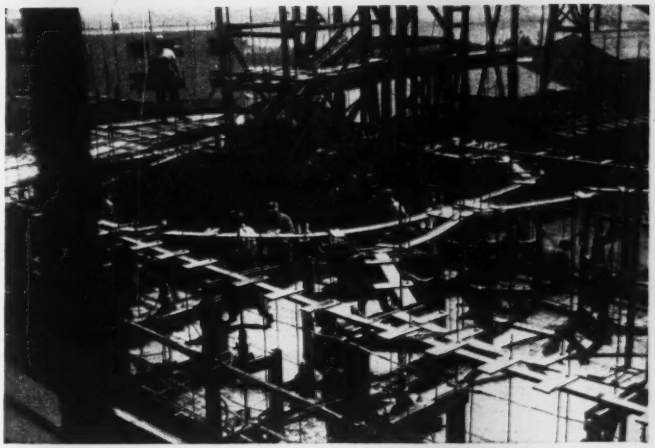
• **Slip form innovation**—Both silo groups were built by slipform techniques, which now are familiar to most construction men. But the method of jacking is relatively new.

Instead of raising the forms with jackscrews on the yokes and jacking rods, the Nicholson Co, New York, used a Swedish hydraulic jacking system, similar to one described in ENR's new products columns, Jan. 5, 1950, p 118.

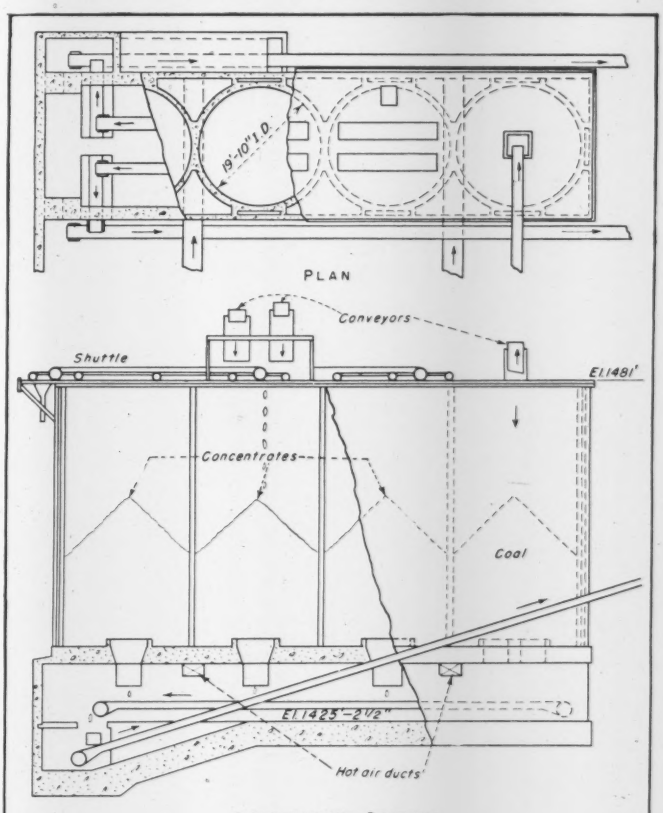
Heart of the jacking system is a compact pump powered by a 1.4-hp electric motor. The pump has 16 connections for hydraulic lines, and these lines can be manifolded to serve a larger number of jacks for multiple erection.

On the complicated structure for concentrate and coal (illustrated) 53 jacks were used.

These jacks each have 2 tons capacity at 850 psi. They operate on one-inch round smooth jacking rods of high-carbon steel, maintaining their grips with ball-in-wedged-slot dogs—in



SLIPFORM POUR—Rectangular outside wall and circular inside walls are placed at the same time, their slip forms being pulled up by hydraulic jacks operating in unision.



TO KEEP CONCENTRATES WARM—Sinter plant silos, three for concentrate and one for sintering coal, are double-walled, to provide heating chamber around storage space and keep damp materials from freezing.

both bottom and top of jacks—that permit movement only upward on the rod. Jack travel is 1¼ in.

Embedded in the concrete, the rods project high enough above to clear the form.

At the beginning of a lift, jack retracted, hydraulic pressure goes into the cylinder and pushes the upper jack element (connected to the slipform yokes) upward while the lower element grips the rod. The form moves up. Then the hydraulic fluid is drawn back toward the pump, and a helical spring in the jack pulls the lower grip to the new retracted position (the upper grip now working). The jack is ready now for another lift. Each jack has a leveling bubble.

Control for jacking operation at Benson Mines was provided by a system of water gages. Fixed at each jacking position, these gages were connected to a common reservoir. By comparing glass elevations with elevations at which forms should be at a given instant, men at individual jacks could regulate the form's progress.

Valves built into the jacks made it possible to turn off a "high" jack until the rest of the form could catch up. The maximum variation to be corrected was ¾ in.

While one pump did the job, the contractor kept a second on hand, in a position where hydraulic fluid lines could be switched over quickly.

The rate of slipform progress on the silo jobs was 17 ft in 24 hours. Slip forms were 4 ft high. Concrete was mixed in a 27E paver, hoisted by a regular elevator tower and buggied to forms. The pouring platform, which was a solid deck inside the structure, also served as support for the roof forms.

• **"Thermos" construction** — The double-walled silo not only was a complicated slip-form assignment, it is an unusual structure. The purpose of the double wall is to keep silo contents from freezing. Concentrate, when it has been dewatered, still is damp.

It remains that way during storage, and if it were allowed to freeze it would be impossible to feed the concentrate to belts for delivery to the sintering line. Therefore, the inter-wall space is kept warm in winter by space heaters. Where the cylindrical walls become tangent with the rectangular, there are ducts that circulate the heated air, feeding it to the large space and then returning it to the heaters.

• **Management**—William Webb is general superintendent for Jones and Laughlin Ore Co. Carl Djuvik is the company's resident engineer. For Nicholson, George Martin was superintendent. Prime contractor on other work at Benson Mines is McDowell Construction Co, Cleveland, Ohio, with D. D. McDonald as superintendent.

Army solves knotty problem, turns liability into asset

The Corps of Engineers has solved one of the knottiest problems involved in construction of four main stem Missouri River dams in the Pick-Sloan plan.

• **The problem:** How best to salvage approximately 92 million board ft of timber (mostly cottonwood) which must be removed from reservoir areas at Gavins Point, Fort Randall, Oahe and Garrison Dams?

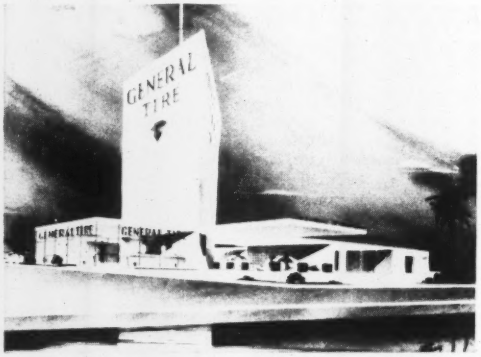
• **The answer:** The cottonwood will be made available to military services for crating, blocking, planking, and framing of temporary buildings at a price of $64.85 per M bd ft, delivered at the nearest railhead.

As the first step in the plan, Col. Henry J. Hoeffer, Omaha District Engineer, announced that the Corps has awarded a $475,134 contract to the Buckingham Lumber Co., of Rapid City, South Dakota, for harvesting about 7 million board ft of cottonwood timber at Fort Randall.

Cutting will start immediately along a 70-mile strip astride the Missouri River. Completion is set for February, 1953. The Portland District Engineer, acting as lumber procurement agency, will serve as jobber.

Allan L. Hubbard, in charge of the Portland lumber division, said the move would reduce demand for pine.

Steel cans cut dead load of concrete canopy



BIGGEST HEADACHE of the Frank J. Rooney Construction Co. of Miami, while building a new service station on Miami Beach for The General Tire Co., was finding 3,700 steel cans. The cans were needed for constructing several large canopies.

The station is dominated by a 75-ft high triangular-prism tower with 30-ft wide canopies cantilevered from 30 to 50 ft. The canopies project from the three sides of the tower, which is connected to the service area by a 60-ft clear span canopy.

The column-free canopy area totals 5,000 sq ft. The underside of the canopies are coffered to reduce the deadload of the cantilevered plates. The coffers were constructed by pouring concrete around the 3,700 metal cans which are about the size of ice cream containers.

The canopies required 115 cu yd of concrete, the entire structure 700 yd. The job required 38 tons of reinforcing steel.

Site of the new station is a corner of one of Miami Beach's busiest crossroads, Dade Blvd. and Alton Rd. Rooney had to raze the old three story Dade-Alton Hotel to clear the site.

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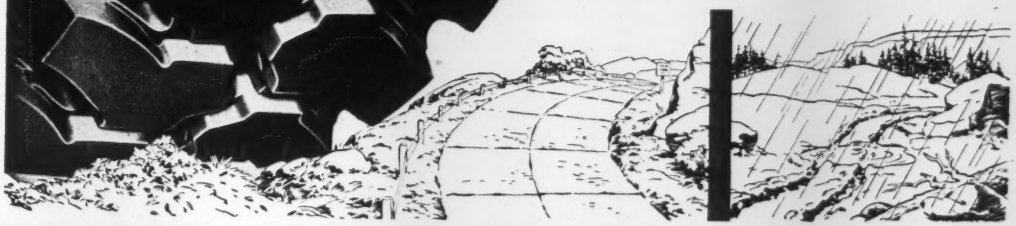

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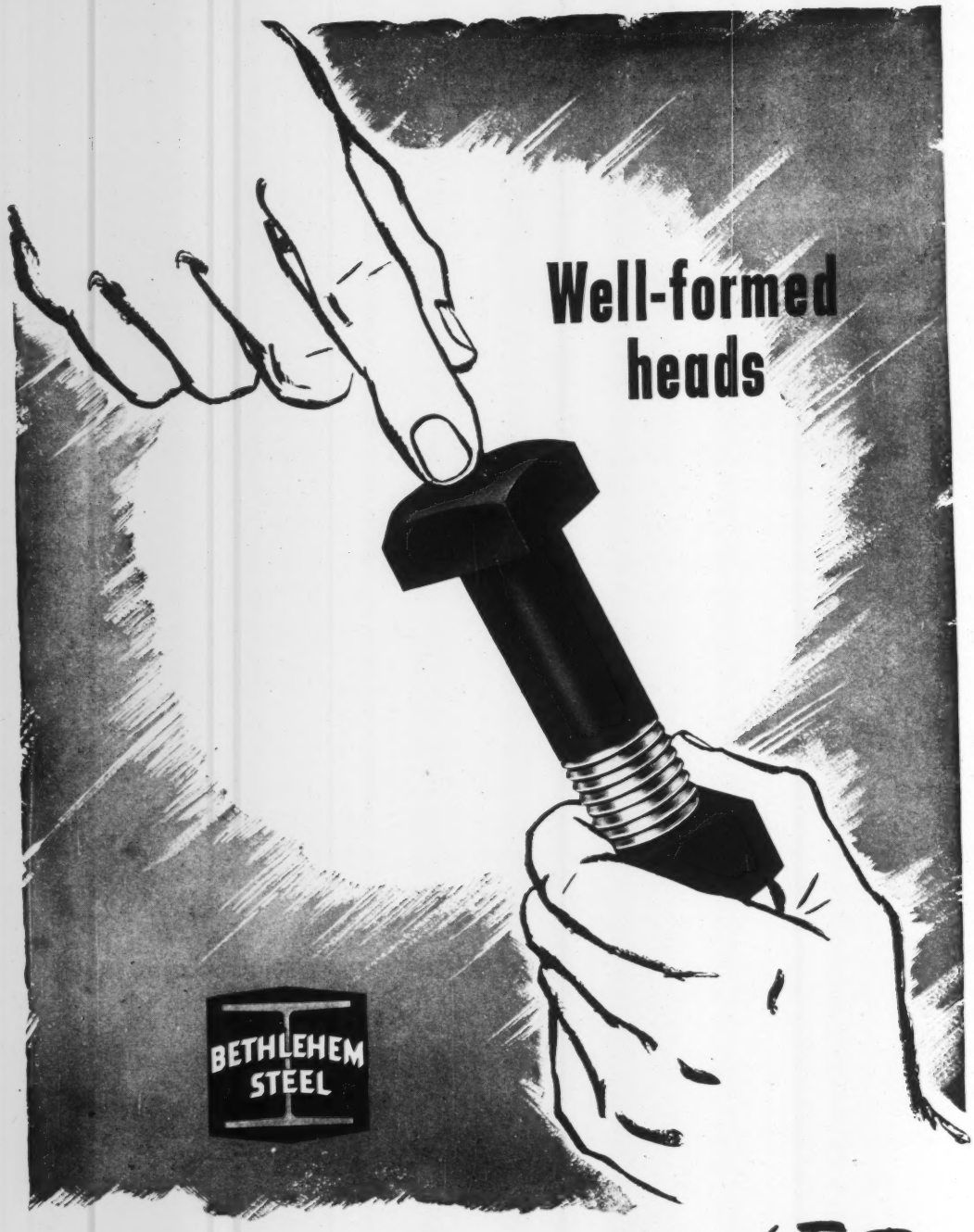

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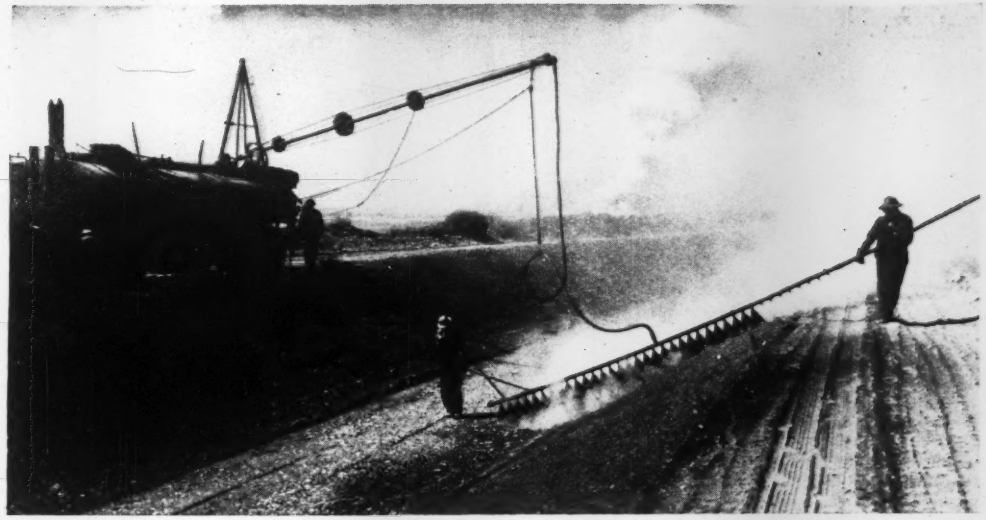


HOT ASPHALT is sprayed on Columbia Basin canal bank as part of buried asphalt membrane lining. More than 50 miles of such lining is being used on the lateral distribution system of this project.

Asphalt lines Columbia Basin canals

MORE THAN 50 MILES of buried asphalt-membrane lined, irrigation canals is under construction in the Bureau of Reclamation's Columbia Basin project in eastern Washington. This is the most extensive use ever made of this relatively new, low-cost lining method first tried on a 408 ft length of canal near Klamath Falls, Ore., in 1947.

Adoption of such a lining is somewhat experimental since no long-time service record is available. But costs are almost one-third to one-half that of any other suitable lining. Buried membrane asphalt lining involves a thin, hot-asphalt-cement coating about ¼ in. thick sprayed on prepared subgrade and backfilled with a protective covering of natural earth taken from the overexcavated canal prism.

This particular Columbia Basin work is in direct contrast with distribution systems in the Central Valley project of California where reinforced concrete underground pipe lines predominate (ENR Oct. 11, 1951, p. 34). Overall, however, many types of canals, wasteways and conduits are used in the Columbia Basin project. There are long distances of both unlined and concrete-lined canals as well as many pipe lines. Up to now concrete lining usually has been limited to main canals. Design choice depends upon terrain and soil conditions in the area.

The irrigation distribution system construction work has been underway for 2 years, with a peak reached in the 1951 construction season. First aim is to provide facilities to irrigate an initial 87,000 acres this year. Plans call for an additional 60,000 to 70,000 acres to be brought under irrigation in each of the next 6 years. A gigantic basinwide celebration is planned this May to mark the first major irrigation in the area.

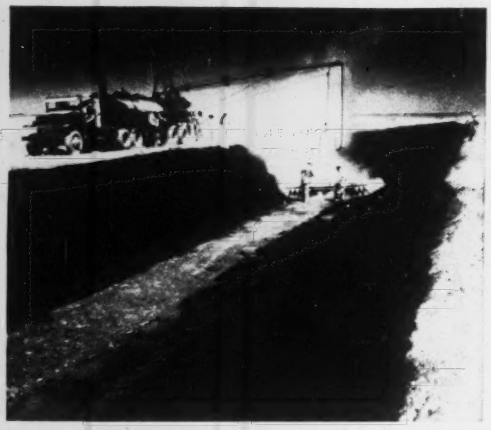
Irrigation features of this project have been under construction since 1946 (ENR May 16, 1946, vol. p 780). But major emphasis has been on the main canals, together with their siphons and tunnels, and on the world's largest pumping plant at Grand Coulee Dam (ENR Nov. 11, 1948, p 80). First water entered the 27-mile long equalizing reservoir at the head of the project on June 14, 1951, with initial operation of the Grand Coulee pumping plant (ENR June 28, 1951, p 27).

• **Membrane linings are new**—The Bureau of Reclamation for some time has had underway a study program aimed at development of lower-cost canal linings. This buried membrane lining is one of the results, and in the Columbia Basin work it costs about 80c a sq yd. This compares with a minimum of about $2 for other lining previously tested, as for example on the Pasco lateral system (which receives water directly from the Columbia River by pumping, ENR July 22, 1948, p 74) when lowest cost work was for 2-in.-thick asphaltic concrete lining at $2.06 a sq yd. Gunite lining, 1½ in. thick, cost $2.58 a sq yd.

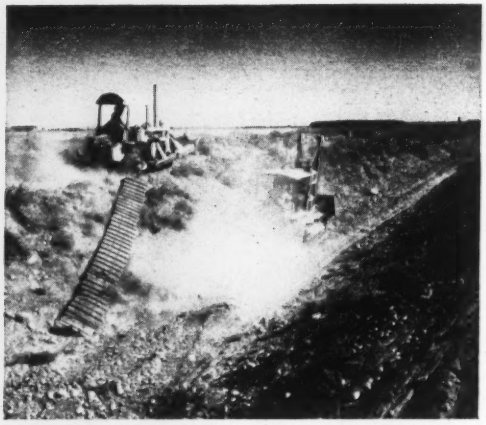
From all appearances, maintenance of the buried membrane lining should also be relatively simple. But maintenance costs and procedures can only be determined after a relatively long period of operation. USBR engineers expect the Columbia Basin to be an excellent testing ground with its great variation in types of subgrade (i.e., sand, gravel and cobbles) under membrane lining.

• **California work compared**—Pipe line construction dominates Central Valley project distribution systems because of the terrain and the fact that much of the load is already highly developed—it could afford a more costly pipe-distribution system which would also not occupy so much productive space.

Columbia Basin farms are laid out in family size plots averaging 80 to 100 acres. The plots are fitted to the canal system so, in general, no laterals bisect a single holding. In California it would have been impossible to lay out distribution canals without bisecting existing farms eligible for water and thus complicating construction as well as maintenance and operation. For all these reasons, pressure pipe



CANAL BOTTOM gets a single pass asphalt coating after two passes on the side slopes. Minimum for either side slopes or bottom is 1¼ gal per sq yd. Lining is later covered with 12-in. or more earth backfill, also a protective gravel blanket in swift current sections.



SIDE SLOPES ARE DRAGGED in gravelly soils with heavy tractor tread as first step in lining process. This moves loose material down into canal bottom. Second pass in other direction removes material not taken out by first pass. More passes are made if necessary.

lines were built along the checkerboard-like existing rural road system.

• **Installing lining**—The procedure for installing the membrane lining has been well worked out and can be routinely followed. It involves the following steps:

EXCAVATION—First the canal alignment is graded—much like road work. Fills are built up to a solid trapezoidal section, leaving room for additional material that will later be excavated from the canal prism. Excavation is accomplished by draglines on the larger laterals. On smaller canals, self-propelled or pulled plow-like ditchers are sometimes used.

For membrane lining, the prism is overexcavated, excess stockpiled along the bank to provide cover material. In gravelly or cobbly soils additional overexcavation of the bottom may be necessary to provide room for material removed by slope-dragging operations. Side slopes are not steeper than 1¼ to 1 and may be as flat as 2 to 1.

DRAGGING—Next the side slopes are dragged by some sort of metal beam or, in many instances, sections of crawler-type tractor tread. Purpose is to remove loose material from the side slopes and provide a relatively smooth surface. The drag is required to weigh about 30 lb per ft of length for ordinary type soils. For hard subgrades or where cobbles or boulders are encountered the required weight may go up to as much as 100 lb per ft.

Excess material accumulated on the bottom of the canal as the result of dragging is removed by dragline crane.

ROLLING—Next the slopes and bottom are consolidated by rolling with a solid roller weighing at least 50 lb per lin in. Two passes are specified, with additional passes if necessary. Sandy soils are not rolled.

SUBGRADE SPRINKLING—Just before the membrane is placed, the subgrade is thoroughly sprinkled to aid penetration and provide better asphalt coverage. This is particularly necessary for dry powdery soils. A fine water spray is used so it will not erode the subgrade. Pools of water are removed or allowed to dissipate.

ASPHALT APPLICATION—Asphalt cement is applied at about 375 F from hand-carried distributor spray bars with nozzles arranged to cover the entire slope or entire bottom of the canal. Side slopes are covered first with two passes, leaving the bottom free for walking. Then the bottom is covered in one pass.

A minimum of 1¼ gal per sq yd is specified, but the actual application has averaged about 1.8 gal per sq yd due to coarser subgrade materials.

Material used for the membrane is a catalytically blown asphalt (with phosphorus pentoxide as the most satisfactory catalytic agent). This material—tougher and more durable than air blown—has ability to retain ductility from low to high temperatures with good ductility at normal air temperature. It has a relatively long life when protected from the air and sun—thus the need for the earth cover.

Other properties of the asphalt cement are as follows: flash point, not less than 425 F; softening point between 175 F and 200 F; 50-60 penetration at 60 F; not less than 30 penetration at 32 F; and not less than 97% bitumen.

Asphaltic cement is loaded at about 455 F into 10,000-gal insulated railroad tank cars for transport to the project. At the siding it is re-heated by portable steam generators to a 350 to 400 F range with this temperature maintained by a retort. The material is transferred to 2,000-gal tank trucks suitably equipped with pumps and heaters to be taken to the lateral site. These transport trucks maintain a temperature range of 350 to 390 F. Placing is done from 3,000-gal distributor trucks, also equipped with pumps and heaters.

EARTH COVER—Dragline cranes place the earth cover over the asphalt membrane after it has cooled. A thickness of 12 to 20 in. is required depending on depth of water. Where available cover is erodible under designed water velocities, a gravel (sizes 1½ to 3 in.) blanket is substituted for the top 4 to 8 in. of cover. In fine silty material, as little as 1.5-fps velocity would damage the unprotected cover.

Cover placing starts at the bottom and works up the slopes. In cobbly material some fine material is placed first to act as a cushion protecting the membrane. Care is taken in placing the cover lest dropped rocks injure the membrane, particularly in freezing weather.

• **Irrigation charges**—The distribution systems are provided with meter gates, Cippoleti weirs, and constant head orifices for measuring flow to the individual farms. Ditch riders under the jurisdiction of water masters will actually turn the flow to farms as needed. A water master area will comprise about 40,000 acres, and each ditch

rider will handle 4,000 to 5,000 acres. Three irrigation districts have been organized to represent the owners of project lands

Each new area brought under irrigation will pass through three stages: first, the testing year when the system is primed and tested; then, the 10-year development period; and, finally, the construction repayment period (40 years under present laws).

Charges for water delivered during the testing year are nominal as service will be substandard. During the development period, charges include only cost of operation and maintenance (O&M) of the irrigation system. During the repayment period, charges will also include that part of all the Columbia Basin project construction cost allocated to irrigation.

Tentative seasonal water allotments vary from 3½ to 5 acre-ft per irrigable acre—the lower amount for Class 1 land and the higher for the poorer Class 3 land. Charges are varied according to the productivity ratings of the land. Excess water above the seasonal allotment will be provided if available and if requested, but at a higher rate.

O&M charges beginning with the development period reflect a complex water conservation policy. Charges per acre-foot increase as excess water is requested to promote water conservation, to reduce drainage problems, to minimize injury to lands and to reduce pumping costs. The entire O&M cost will be collected; but, during the development period, charges will be less than cost the first few years and greater than cost the last few years

Present estimates are that the annual O&M costs will average $5.50 per acre. Of this amount, 85% will be collected through county taxes and the rest through direct sales to water users where more water than that obtainable through tax payments is desired. Thus, the O&M charges must be paid whether water is used or not. And all such tax charges are paid in advance.

About $2 of the $5.50 per acre O&M charge is required to meet cost of power (at ⅘ mill per kwhr), labor and materials for water pumping—both primary pumping at Grand Coulee pumping plant and relift pumping at various locations on the project. O&M charges to a particular farm will not consider location; i.e., lands under relift pumping will pay the same charges as land of equal quality not under relift pumping.

When the repayment period begins (1963 for the initial 87,000 acres), charges will also include a pro rata share of the project costs allocated to irrigation. As in other projects built under the Reclamation Law, where substantial power generating capacity is included, the income from power will to a certain extent subsidize the irrigation work. So too will such things as flood control and recreation where allocated costs are not repayed, but in effect come direct from the federal government.

In accordance with basic reclamation law, the costs allocated to irrigation will be repaid without interest over a 40-year period. Although the amount is not yet definite, this may run to the order of $85 an acre or only 35% of the actual irrigation construction costs.

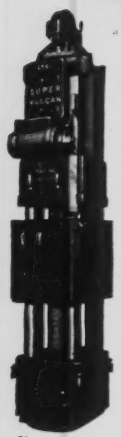
The expected population growth of the Columbia Basin area is developing many other collateral problems. Included are such things as the development of roads and schools in areas where tax bases aren't yet established. The federal, state and county governments are working together on these matters to develop an equitable solution.

• **Credits**—The work is under the jurisdiction of the U. S. Bureau of Reclamation. H. A. Parker is district manager of the Columbia River district. L. V. Downs is supervising engineer of the irrigation construction division. A. J. Davidson is chief of the design branch and F. S. Arnold is chief of the construction branch of the division.

COLUMBIA BASIN DISTRIBUTION SYSTEM CONTRACTS

Contractor	Contract Amount	Contract Completion Date	Percent Complete Dec. 1, 1951	Major Quantities: Asphalt Membrane (sq yd)	(mi canals)	Unlined Canals Capy (cfs)	(mi)	Concrete Pipe dia (in.)	(mi)
For 87,000 acres to be irrigated in 1952									
Collins Concrete & Steel Pipe Co., Portland, Ore	$1,117,600	Jul. 3, 51	97	206,000	17	2 to 93	34	12 to 54	9.5
J. A. Terteling & Sons Co., Inc., Boise, Ida	578,825	Jun. 30, 51	100	177,000	10	2 to 98	35	12 to 48	5
Terteling	935,121	Aug. 21, 51	100	49,000	3	2 to 145	78.5*	12 to 60	3
Intermountain Plumbing Co. & Henry L. Horn, Boise, Ida	314,918	Jul. 31, 51	100			2 to 335	23	12 to 48	1.4
United Concrete Pipe Corp., Baldwin Park, Calif	547,622	Aug. 28, 51	93	16,900	¾			66 to 78	2.5
Terteling	655,375	Jul. 25, 51	100	261,100	13	3 to 247	19	12 to 54	3
Collins	488,449	Aug. 21, 51	88	47,800	4.5	2 to 71	36.5	12 to 42	5
Geo. Pfeiffer, Spokane, Wn	41,806	Apr. 8, 52	0			1 to 2	1.8	12	2.6
For land to be irrigated in 1953									
Minnis & Shilling and United Concrete Pipe Corp	$1,522,552	Aug. 22, 52	23	60,000	4.5		81.5	12 to 72	11.7
United	491,041	Mar. 31, 52	62			Quincy pumping plant			
Long Construction Co., Billings, Mont	1,598,362	Part Sep. 8, 52 Rest Apr. 6, 53	0		15.9**		35.8	12 to 42	5.7
Cherf Bros. Constr. Co. & Sandkay Contractors, Ephrata, Wn	1,297,351	Oct. 17, 52	5		6.5**		90*	12 to 30	2
Intermountain & Horn	237,437	Nov. 12, 52	0				14	12 to 36	3
Hunt & Willett, Inc., Wenatchee, Wn	234,261	Oct. 31, 52	0			Three outdoor pumping plants			
Feb. 5, 52 bid opening		Three pumping plants			½**		21	12 to 60	2.2

* Includes drains and wasteways
** Concrete lined



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WATER IN THE DESERT—Centuries of silt had put many great, square cisterns out of service. Given tools and taught to operate them, Jordan will reclaim water supply for its excess population.

U.S. and Jordan sign agreement for resources development program

The State Department has just announced that the U. S. will contribute $2,780,000 and the Kingdom of Jordan will put in the dinar equivalent of $1 million for a development program agreed upon between the two countries.

The money is to be spent for increased agricultural production, development of water resources, health, education, transportation, and some industrial installations.

The new agreement, signed at Amman Feb. 12, amplifies a general Point 4 agreement for technical cooperation signed between the U. S. and Hashemite Jordan in February, 1951.

President Truman's "bold new program" of technical assistance to underdeveloped areas—is now well established under the Technical Cooperation Administration, Department of State. Here's how it works on the Jordan project.

TCA engaged Knappen Tippetts Abbett McCarthy, New York consulting engineers, to supervise an approved Point 4 project in the Hashemite Kingdom of Jordan. R. D. Gladding went to Jordan for the firm to size up, lay out and direct the work. He has just returned to the U. S leaving John I. Monroe of the same firm in resident charge. These two men, a $43,340 contract, and less than a year's work to date make up a fairly typical example of present U. S. efforts to help people help themselves.

There is nothing grandiose about most Point 4 projects undertaken so far. Taken one at a time they are not at all impressive. But in total, they add up to a lot of engineering services, education and industrial stimulation that should in time lead to bigger construction undertakings by the countries themselves. That is the basic Point 4 philosophy.

• **From small beginnings**—All Gladding and Monroe have done in Jordan is teach some men to operate a dragline, two tractors and a scraper; and get them started on reclamation of some silted-up old cisterns.

The effort will be relatively slight; results should be great.

Jordan's problem is displaced persons, refugees from Israel, perhaps 500,000 of them. This 50% overload of the Arab kingdom's normal population has a naturally nomadic people shifting seasonally back and forth across the country—mostly all on U.N. relief. Their chief reason for shifting about is quest of water.

Given a water supply, perhaps they would stay in one place long enough to be put to some constructive occupation. At least, that was the idea suggested by George Walpole, head of the water development program for Jordan, and presented to our State Department as a Point 4 possibility.

A potential water supply was there in the form of 140 open reservoirs believed to have been built by the Ro-

mans, and now filled with silt to the point of disappearance in many cases.

What the digging tools had to work in was clay; the desert is clay, not sand. Excavation work is finished on the first reservoir, and there remains perhaps two year's more work to reclaim the best of those remaining. The cisterns are located mostly in the north of the country along what is said to have been the overland route of Persia-to-Egypt caravans in the first several centuries A.D.

On the west border flows the River Jordan, potentially the backbone of a great reclamation scheme for its entire valley (ENR Mar 22, 1951, p 26). But across the Jordan is Israel, and, present political problems being what they are, there is ilttle immediate prospect of any bipartisan international development of the valley. Unilateral development in Jordan would be blocked by financing even if it were practical.

• **Multiplied out**—Take this Jordan project as a pretty typical one insofar as money and personnel are concerned at the present stage of Point 4 growth. Multiply it out by the numbers of such projects and personnel involved to get these figures:

There were 577 U. S. technical personnel in 33 countries working on Point 4 projects for the cooperating U. S. agencies. These include: Agriculture, Interior, Labor and Commerce departments; Housing and Home Finance Agency; General Services Agency; Federal Security Agency; Institute of Inter-American Affairs.

In addition, there were some 42 persons engaged abroad on private contracts or involved in grants to educational institutions or other groups. This private participation, encouraged by the Technical Cooperation Administration, accounted for about $4 million worth of work.

Largest private contract of all was a $624,000 deal for expansion of curricula at the American University of Beirut in Lebanon. But there were a scant dozen private contracts reaching six figures. Most are down in the range of the Jordan job.

Among the large-scale recipients of technical assistance will be India, Iran and Pakistan. These countries are reportedly due to receive respectively $54-million, $23 million and $12 million worth of aid under the present program. These sums are supposed to include only salaries of technical personnel and the equipment they will need. Funds for big projects tackled are intended to come from the foreign government concerned, private investment, or loans from the Export-Import Bank or International Bank for Reconstruction and Development.

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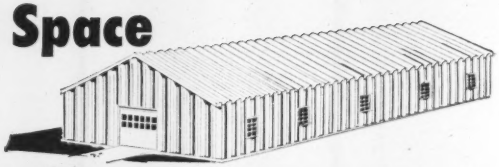

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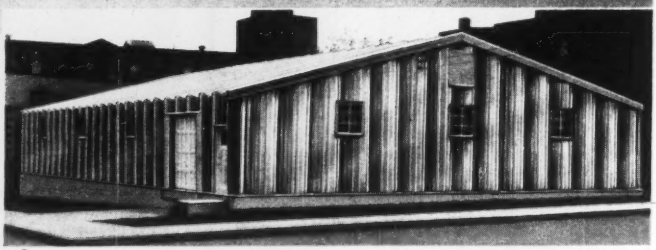
FRAMELESS *Monocoque* Construction

ABOVE, RIGHT: Redfield and Company, Omaha, Nebraska, printing firm, erected this 52′ x 90′ Behlen Frameless All-Metal Building for storing paper and supplies. Note the full, wall-to-wall storage space.



IMPORTANT ANNOUNCEMENT

Watch for your March 27th Issue of Engineering News-Record

A broad new application of Monocoque Construction — that further expands the tremendous potential of Behlen Frameless All-Metal Buildings — will be released next month in the pages of Engineering News-Record.

As this issue goes to press, a new type Behlen Building is nearing completion. It is the largest ever erected —100′ x 550′ x 17′. It is a warehouse for the Union Stock Yards Company of Omaha.

Watch for our announcement you will find it of the utmost interest.

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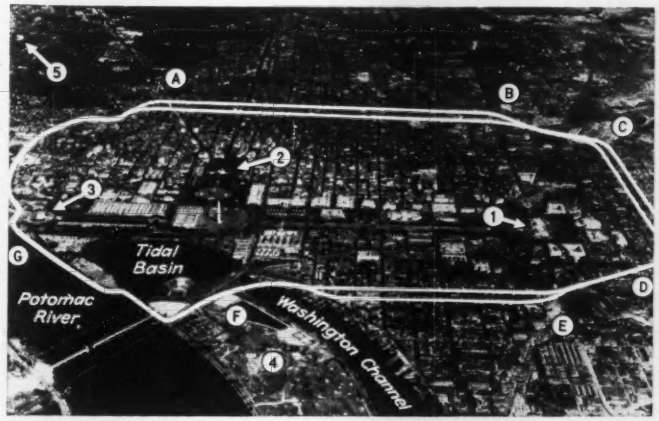

INNER LOOP BELTWAY proposed for downtown Washington, D. C., to keep traffic away from the heart of the city. The aerial view shows (1) the Capitol, (2) the White House, (3) Lincoln Memorial, (4) East Potomac Park, and (5) Washington Cathedral. The letters A, B, C, D, E, and F, indicate important street intersections along the route which is a combination of improved one-way streets costing about $21.5 million. (Photo by Fairchild Aerial Surveys)

Road plan mapped to cost $96 million

After 3½ years of study Washington, D. C., proposed to spend $96 million over a period of eight years to increase the usefulness and capacity of its bridge and highway system.

The plan was proposed by the Regional Highway Planning Survey, and the Washington parts of the plan were approved by the District Commissioners and sent to Congress for passage.

The heart of the plan is the downtown ring roadway, a $21-million compromise plan (called a "poor man's freeway") to keep the 25% of traffic which has no business in the downtown area out of the heart of Washington by providing a connected series of one-way streets, widened streets and streets from which streetcar tracks have been removed.

Had a true freeway, with no intersections, been proposed it was estimated that it would have cost $126 million.

The second part of the program will cost about $75 million and will include more radial roadways and three bridges plus many highway and street improvements.

The total number of new projects proposed by the plan is 50. A breakdown on the projects shows that 24 of them are primarily highway widening jobs; 8 concern the building of ramps and overpasses; 6 are taken up with altering streets to make them suitable for one-way traffic; 5 are streetcar track removal jobs; 3 of the projects are intended to build new highways or extend older ones; 3 are concerned with new bridges or reconstructing bridges; one of the projects is a survey to be made for another large project.

Money for the new program would be raised by means of an increase in gasoline taxes from 4¢ to 5¢. Nevertheless, the plan would still lack some $50 million to accomplish all the work. This would have to be made up by borrowing, raising taxes, or getting a larger federal grant.

Hartford plans to spend $11 million in five years

City Manager Carleton F. Sharpe presented a five-year capital improvements program costing an estimated $11 million to the nine-member City Council of Hartford, Conn. The council put aside discussion of the recommendations to a recess meeting scheduled for a later date.

Of the $11 million, new bond issues would finance $9 million, while the remaining $2 million would be financed on a pay-as-you-go basis by appropriation in the operating budgets throughout the five-year period.

Heading the proposed bond issues are plans for a high school or junior high school during 1954-1955 and reconstruction of Hartford Public High School in 1955-1956. Each project is estimated at $2.5 million.

Other proposed projects include: School heating improvements; street improvements; parking lot improvements; acquisition of land for a new school; building of a recreation area; conversion of a school building into a police headquarters and courthouse building.

Municipal briefs . . .

• **Urges zoning changes**—Boston's Mayor John B. Hynes urged the board of appeals of the city's building department to relax present zoning policies because the city faces loss of $20 million in taxable property through land-taking for new arterial highways.

• **Two projects at Sharon, Pa.**—The western Pennsylvania city of Sharon is planning a $3-million elevated-highway and bridge system and a $500,000 parking lot project.

• **New Boston market center**—According to Hornblower and Weeks, financial advisors to the Massachusetts Market Authority, the financing of a $25-million Boston market center will be accomplished through the sale of a revenue bond issue. The securities firm has retained Coverdale & Colpitts, consulting engineers, of New York City, to verify the economic soundness and practical trade value of the project. The master plan was prepared by Praeger-Maguire and Fay, Spofford and Thorndike, engineers of Boston. The center will be located in the South Bay area and will provide new quarters for wholesale dealers in perishable foods. There will be direct rail and truck connections to the new Boston market center.

• **Birmingham, Ala., plans for growth**—A master plan to provide Birmingham with a motor belt superhighway around the main business district and facilities for industrial and cultural growth has been recommended to the City Commission. Other projects recommended include many new public buildings, parks, schools, a civic center, expanding industrial water supply and constructing a storm drainage system.

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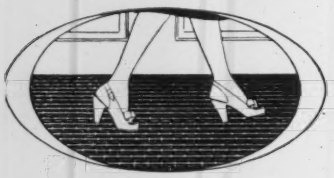

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MICHAEL BAKER, JR., contractor who will alter the sandy kingdom of Saudi Arabia.

Contract to remake kingdom

Michael Baker Jr., 39-year old engineer from Rochester, Pa., has reached a new peak in a success story that reads like a page out of Horatio Alger.

His latest and biggest project takes him to Saudi Arabia. There, under contract with King Ibn Saud since the first of the year, the youthful engineering firm of Michael Baker Jr., Inc., is engaged in a vast modernization program.

Mr. Baker intends to develop public works for the Arabian government at the rate of about $10 million per year. The two-year contract is renewable on a performance basis.

His contract encompasses: Building highways, power plants, airfields, port facilities, hospitals, water and sewer systems; developing Arabia's untapped wealth of minerals, including its strategic materials; handling purchases for the Middle East kingdom; operating docks, plants, restaurants, government garages, air-conditioning; and even supplying a cook for Crown Prince Saud Ibn Abdul Aziz.

In jumping to Arabia, the Baker firm will more than double in size to 2,700 men. Average business gross will climb to many times over the previous average of about $2 million per year.

• **Starts at bottom**—Son of a Beaver County (Pa.) surveyor, Baker mustered enough money in 1930 for a year of civil engineering at Pennsylvania State College. A teen-age marriage and the depression forced him to drop out and take a job as timekeeper on the nearby Pymatuning Dam. From timekeeping, he went into railroading.

He wrote letters to 10 prominent families he knew asking for a loan to get through school. One of them sent him $200 with a promise of more.

Young Mike got his civil engineering degree at Penn State in 1936. His wife helped by taking 12 student boarders into a big house they rented at State College, Pa. During the summers, Mike worked at Pymatuning Dam and wrote a book, "The History of Pymatuning." He sold 13,000 copies for 25¢ each.

After graduating with high honors, he served two years as borough manager and engineer at State College, but felt he wasn't paying off his $5,000 college loan fast enough.

So, in 1937, Mike tried road construction. He just missed a $400,000 job by bidding $500 too much and then took an ill-fated fling at coal stripping.

Everything was lost in a bad seam of coal that sold for 95¢ a ton—less than it cost to dig. He was cleaned out by Christmas of 1939.

• **Try, try again**—Without money and working in a steel mill, Mike decided to try again. In April, 1940, he moved into a small hotel room in Rochester and started writing letters—thousands of them. For six months he couldn't pay the hotel bill or his secretary's salary.

The letters and his knack for getting things done paid off. From a few small surveying jobs, the one-man company grew to a full-time staff of eight with a gross business of $15,000 by the end of 1940.

With the help of labor and civic groups, he set up a County Housing Authority in 1941. Business boomed, as he took on the triple job of engineer for the authority, borough and county.

After Pearl Harbor, Mike began another letter-writing campaign. The Army, at first, ruled him out because he was only 30 years old and lacked the reputation to handle big projects.

Finally one of his letters produced results. Rust Engineering Co., of Pittsburgh, needed help on a rush job for a TNT plant in Paducah, Ky. Eleven survey parties were needed in five days. Although he had no men or instruments to start with, Mike had 11 parties in the Rust office at Paducah on the evening of the fifth day.

In producing a critical area survey in 10 days and polishing off the entire job in two months, he did something the Army needed badly and didn't think could be done so quickly.

• **Wins reputation**—The company's reputation for speed spread. Calls came in from other U. S. Engineers offices.

The list of jobs and places grew longer: Camp Rucker, Fort Benning, Mobile, Jacksonville, Atlanta, San Antonio, Miami.

From 1942-45, the "war baby" company snowballed to 1,000 employees with operations stretching to Alaskan airfields, harbors and underground bases. His firm also worked on strengthening runways of B-29 airfields in the U. S.

Since 1943, Michael Baker Jr., Inc., has had a gross business averaging more than $2 million a year, weathering the tough postwar period of contract termination and renegotiation.

The company has hacked out 14

(Continued on next page)

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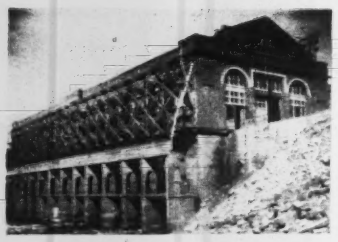

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This job, and many other types of "GUNITE" jobs done by us, are illustrated and described for you in our 64 page Bulletin (A) 2400. For more information, perhaps closer to your own needs, write for free copy. We'll be glad to cooperate with you in solving your construction problems.

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Men and Jobs . . .

air bases in the wilds of Brazil, others in the Azores, Curacao, Aruba, Trinidad, Tobago, and the Guianas. It has a total of 159 airports and air bases throughout the world to its credit.

They handled a 5,000 sq mi survey of the Florida Everglades, a 10,000 sq mi job in the Missouri River basin, 5,000 mi of co-axial cable line, 6,000-mi cross-country pipe lines and surveyed half of Mississippi and Louisiana for the Humble Oil Co.

His firm represents three-fourths of the municipalities in industrial Beaver County and has had a hand in 14 slum clearance, defense, public or private, projects throughout the U. S.

• **Biggest bite**—Their latest project, in Arabia, is the biggest bite of all: Operating on a fixed fee and percentage on everything over $6 million a year, they will, in effect, attempt to build a new country out of an old one.

Spearheading the Arabian task force are 200 Americans who were recruited from 8,000 who applied for the lush $8,400-a-year (average) tax-free jobs through newspaper ads. Michael Baker Jr. regards the project in Arabia as his greatest challenge.

Assistant manager leaves Atomic Energy Commission

Maj. Gen. Thomas F. Farrell, assistant general manager of the Atomic Energy Commission, has resigned. He is to become managing director of Aro, Inc., a private concern that manages and operates the government-owned Arnold Engineering Development Center at Tullahoma, Tenn.

The center, still under construction, is to be the major engineering test center for the Air Force.

C. Warren Black given new post with Arundel

C. Warren Black, vice-president since 1940, was elected, by the board of directors of The Arundel Corporation, executive vice-president of the corporation in charge of engineering and construction, it was announced by Richard A. Frochlinger, president.

Mr. Black has been a director of the corporation since 1943. He is also a director of Arundel-Brooks Concrete Corp. and of the Maryland Slag Co., and vice-president and director of National Constructors, Inc. He was a director of Pacific Constructors, Inc., which built the Shasta Dam in California.

He is a member of the ASCE and the Engineers Club of Baltimore.

Industry dominates Ohio water clinic

It was billed simply "Ohio Water Clinic," and of 20 subjects scheduled for the day and a half of discussion only four had specifically industrial water or waste titles. But of 240 attending the meeting Feb. 14-15 at Ohio State University nearly 90 came directly from industry. Others came indirectly, as representatives of various chambers of commerce.

Fact is, it was the Ohio Chamber of Commerce that hatched the whole conclave. Battelle Memorial Institute, the State Division of Natural Resources, and Ohio State University joined in its sponsorship; Dean Charles E. MacQuigg of the college of engineering was chairman of the program.

Much of the meeting's impetus appears to have come from passage in extraordinary session last summer of a strong new anti-pollution law for Ohio, and from court actions threatened since under the old state law, effective until next September (ENR Oct. 4, 1951, p. 112). Thirty-one communities and 25 industries have been cited as stream pollutors by the state's attorney general.

Obvious concern about how they are going to live with increasing restrictions on disposal of liquid wastes brought some of the assorted water users and abusers to the meeting. If it was solace they sought, they found little.

Attorney General C. Williams O'Neil, in an unscheduled appearance, warned industry's representatives present against a "program of fighting retreat." Any industry dragging its feet on effluent cleanup is asking for legal action, he said. And he warned against any attempt to play on present confusion of enforcement powers in Ohio, where half a dozen different agencies now claim a share of authority in clean streams matters.

On the municipal side, O'Neil singled out Youngstown (where mayor and city council have been quibbling over exactly how to finance needed sewage facilities) as about due for criminal legal action. Legal actions against others are anticipated, but the attorney general reported that appeals to avoid litigation have brought desired results in cases of many industries and cities cited.

• **Industry not hurt**—Equally small solace for those who opposed the new Ohio law and who still object to "some of its language" was to be found in remarks of E. J. Cleary, executive director and chief engineer of the 8-state Ohio River Valley Water Sanitation Commission (OrSanCo). He refuted the "erroneous impression" that industry will shy away from states with rigid clean-streams legislation. There is documented evidence to the contrary, said Cleary, deploring continued laggardness and vacillating of some industries in matters of stream pollution abatement.

Pollution can't be prohibited; it takes cash and incentive, a sense of social responsibility, to get it abated, said Cleary. He expressed the hope that aroused public support responsible for passage of Ohio's new legislation would prevail as bond issues for construction of sewage works came up for vote.

State Director of Health John D. Porterfield summed up his discussion of water supply and public in Ohio health as a "severe condemnation of present conditions." He said 75% of Ohio's supply comes from surface waters that receive a billion gallons of wastes daily, half municipal and half industrial. He claimed that at Cincinnati there was a quart of sewage in every gallon of Ohio River during low flows.

C. A. Snavely of Battelle Memorial Institute, Columbus, set industrial water use in Ohio at 8 times the volume of domestic use. Big water users are steel, oil refining and power; chief use (50% of the total) is for cooling. Reuse of water within industrial plants is spurred (where it is practiced at all) by the high cost of treating raw water for industrial uses, said Snavely.

Suggest higher interest on FHA and VA mortgages

At the Feb. 15 mortgage conference of the Mortgage Bankers Association of America at Chicago higher interest rates on FHA insured mortgages and VA guaranteed loans were urged.

Association President A. M. Costa of Dallas, Tex., asserted that higher interest would attract private investors into the field and end the tight money.

The association's proposals are being submitted to the Banking and Currency Committee of the Senate, which is considering possible solutions of current problems in the mortgage money market.

(*Continued on next page*)

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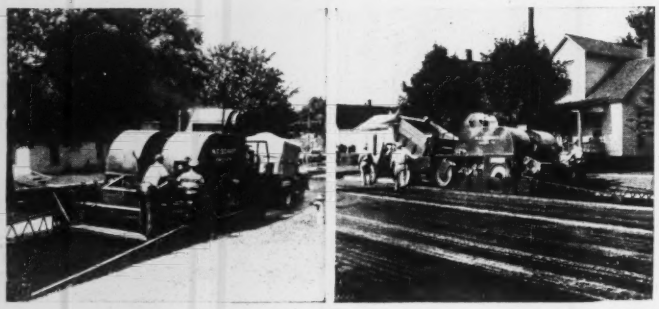

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Meetings . . .

Cover Page Note:

The Associated General Contractors of America are meeting this week in Detroit to discuss pressing issues that confront the industry.

The convention is being attended by about 1,000 delegates. They represent the AGC membership of more than 6,100 leading construction firms throughout the United States and Alaska covering most of the nation's contract construction–buildings, highways, airports, and other heavy construction.

Discussions are being led by top representatives of industry, government, and labor. To bring you a complete account of the significant developments at the convention, ENGINEERING NEWS-RECORD will carry a feature story in the Meetings page next week.

On the cover are Glen W. Maxon (left) who is scheduled to turn over his gavel as president of the association to A. S. Horner (right) at the close of Thursday's session.

Many building craftsmen are idle in N. Y. City

At the annual meeting of the Building Trades Employers' Association of N. Y. City last week Fred J. Driscoll, the newly-re-elected president, commented on the sharp decline in the volume of construction in the metropolis.

He called upon the National Production Authority to send a special "task force" to survey conditions in New York. The study would be similar to one being made in Detroit to relieve unemployment in the automobile industry. He reported that there are more than 25,000 building craftsmen now unemployed in the city, and that the number is growing daily.

FRED J. DRISCOLL, President of BTEA

Pricing relief wanted by concrete makers

At open-forum discussions in Chicago last week at the National Sand and Gravel Association and National Ready Mixed Concrete Association conventions both groups would like to see an outright repeal of present price control regulations affecting their end products. They hope to exert enough pressure on the Office of Price Stabilization to obtain emergency relief, at an early date.

Another issue at the 5-day meeting—which had a record attendance of nearly 3,000—is governmental regulation of wage and salary increases. Present limitations on these increases—limited to 10% since Jan. 15, 1950, plus about 4% for cost-of-living increase since Jan. 15, 1951—are adversely affecting both industries. Some members of the industry reported these inequities had caused them to lose key workers. Others said they breed slowdowns and work stoppages.

OBITUARIES

Ralph D. Mershon, 83, who designed and supervised the construction of power plants in various parts of the world, died at Miami, Fla., Feb. 14. In 1932 he was awarded the Lamme engineering medal.

Frank D. Coleman, 69, who supervised construction of many of the big electric transmission lines in western Montana, died in Billings, Feb. 10.

Hamilton G. Kitchen, 85, who carried out railroad building in the New Brunswick, Prince Edward Island, Manitoba, and Saskatchewan, died at Fredericton, N. B., Jan. 30.

Sanford W. Benham, 52, research engineer for the Indiana State Highway Commission, died in Indianapolis Jan. 31. He had been with the commission since 1931. He was graduated from Purdue University in 1926.

Homer H. Criswell, 74, Cambridge, Ohio, contractor, whose firm built many churches and schools, died Jan. 28.

James G. Bent, 77, general superintendent of construction of the Ritz-Carleton Hotel, the Fore River Bridge and other major projects in the Boston, Mass., area, died Feb. 16.

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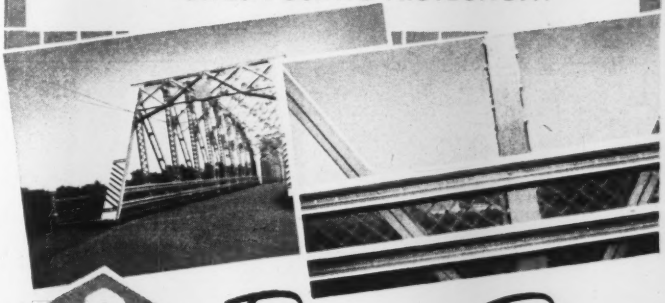

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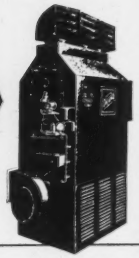

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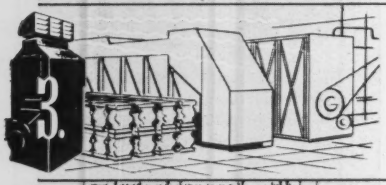

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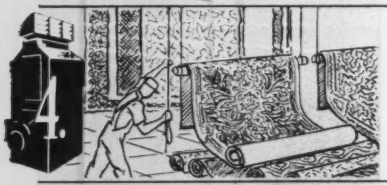

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MISS HELEN HUMPHREY, chairman of the National Enforcement Commission of the Wage Stabilization Board which will review regional enforcement unit findings and hear appeals from the decisions of those commissions. (Photos by Dick Wolters)

Enforcement body presses wage cases

Wage-control violators are beginning to feel the teeth in the government's program to enforce restrictions on wage increases.

The three-member National Enforcement Commission established by the Wage Stabilization Board to act in a judicial capacity against wage-rule violators will, on Feb. 29, hear the first appeal by an employer against findings of a regional enforcement commission.

• **The Hedin case**—In this case, the employer—J. D. Hedin Construction Co. of Washington, D. C.—was given one of the stiffest penalties on record, including the World War II period when more than 7,000 employers were found to have violated wage controls. Hedin paid $116,000 in alleged illegal wages to bricklayers at the rate of $3 an hour when, it is charged, the ceiling rate was only $2.75. The work was on a $7,152,000 hospital Hedin is building for the Veterans Administration at Ann Arbor, Mich.

DESCRIPTIONS of Miss Humphrey include "Frank." "Not Stuffy." "Enthusiastic."

The Detroit Regional Enforcement Commission, whose findings Hedin has appealed, not only disallowed part ($40,000) of the total unapproved wages as a labor cost for income tax purposes—which has been customary—but also has certified to VA that it should deduct another $40,000 from the fixed price of the hospital.

The Hedin penalty is unusual in that the VA is being instructed to knock $40,000 off the price to be paid Hedin. Never before, even during the war, was this penalty invoked.

Hedin is attacking the government's right, [ENR Feb. 14, p. 46] under the Defense Production Act, to cut a fixed price. The contractor also questions whether he did, in fact, violate the wage rules. The $3 rate became the legal rate while he was paying it.

There have been seven other findings of violation—all stipulated settlements—with no appeals to Washington. In all cases except one, the regional enforcement commissions disallowed only the amount of overpayment.

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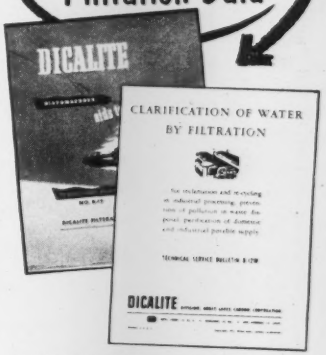

BULLETIN B-12 on general filtration principles; BULLETIN B-12-W details information on filtering potable and waste water.

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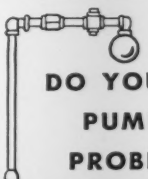

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Labor . . .

• **Other cases**—In all, WSB has issued 39 complaints charging wage-control violation. In addition, under a new procedure of not issuing a complaint where a violation is admitted, there have been ten settlements—subject to approval of the enforcement commission—without formal complaints. That makes a total of 49 formal violation cases.

The list of pending cases includes several in the construction industry.

One is Anchor Fireproofing Co., another Washington, D. C., firm, like Hedin, accused of paying more than $2.75 an hour to bricklayers on another hospital job in Ann Arbor. Hearings, set for January in Detroit, have been postponed indefinitely, pending the final outcome of the Hedin case and a possible settlement.

Others are Chris Berg, Inc., of Seattle; Young-Loftus Construction Co. of La Mesa, Calif.; Haskell Plumbing & Heating Co., of Bellingham, Wash.

• **Inspections and Violations—Violations usually turn up when wage-hour law inspectors check payrolls, although some are reported by competitors and disgruntled employees or disclosed when applications are filed with WSB.**

WSB reimburses the wage-hour division for a certain number of payroll checks. About 70 percent of inspections by wage-hour agents are made specifically in search of wage-control violations. About 30 percent involve concurrent wage-hour and wage stabilization checks.

• **Violations and Prosecutions**—The prosecuting phase is handled by WSB's enforcement division under Eugene D. Dixon, former trial examiner for the National Labor Relations Board. WSB didn't begin to track down violators until late last summer. Since then, it has turned up about 600 minor violations which were corrected and disposed of without any action against the employer. About 265 serious violations have been discovered, and have led to the 49 formal cases thus far.

WSB's approach is that it is more interested in seeing to it that employers comply with wage stablization, rather than in penalties, although penalties are necessary in many cases to help achieve compliance.

Violations are processed by enforcement attorneys in the fourteen regional offices of WSB. Minor violations are closed without formal action, after corrected. In more serious cases, where an employer admits his error, a settlement—called a stipulation—may be reached, subject to approval of the enforcement commission. Where an employer contests an al-

leged violation, formal complaint is filed against him and he gets a hearing before a three-member regional enforcement commission.

In contested cases, this commission must decide whether the employer did violate the law and what the penalty should be. Under the law, the total amount of wages which include an unapproved wage increase may be disallowed as an expense for income tax purposes.

Employers may also be denied priorities and materials allocations. In extreme cases of wilful violation and possibly defiance, the employer may be prosecuted by the Dept. of Justice for a criminal violation. An indictment would be necessary. Maximum penalty: one year in prison and $10,000 fine. This has never been utilized, even during the war.

• **National Enforcement Commission**—Findings of Regional Enforcement Commissions are reviewed by the three-member National Enforcement Commission, to which regional findings also may be appealed.

This commission consists of Miss Helen Humphrey, chairman; Ralph Fuchs, Professor of Law, University of Indiana, and Charles O. Gregory, Professor, University of Virginia.

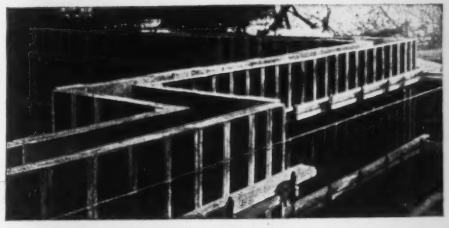
Miss Humphrey, 42, has made government legal work a career. She is frank, not stuffy, and seems highly competent. She has tackled her job with enthusiasm, but not with any "tough" attitude. She seems to have a consciousness for wanting to do the right—the judicious—thing, in all fairness to the violator and to the stabilization program.

Miss Humphrey's father was an engineer on a lake carrier. Born in Detroit, she was graduated from the University of Michigan and got her law degree at Brooklyn Law School.

From 1939 until last spring, she was chief law officer for NLRB in St. Louis, Philadelphia and New York Offices. Last March, she became associated with WSB, served for a while as Associate General Counsel of the Economic Stabilization Agency, then in July was picked by George W. Taylor, then WSB chairman, to head up the WSB Enforcement Commission.

Employers who challenge wage violation findings may be tied up for years in litigation with the Bureau of Internal Revenue. Only last month a federal court upheld the right of the War Labor Board to disallow for income tax purposes more than the amount of overpayment. It upheld disallowances of $50,000 in each of two years—1944 and 1945—against Woodworth Co., producer of aircraft parts.

ATLAS SPEED SYSTEM OF STEEL FORM CONSTRUCTION



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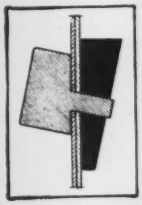

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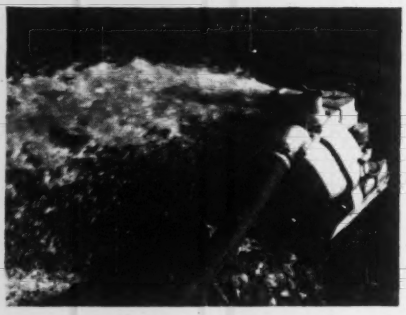

Pumps

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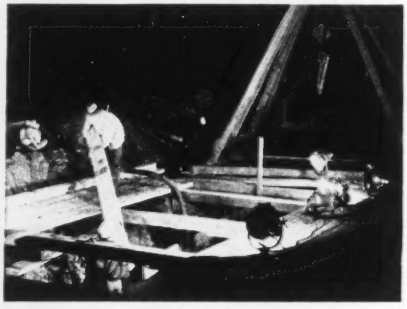

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Clearing construction sites is a fast, low-cost operation with a *27 pound, 4 horsepower* Homelite Chain Saw. In fact, one man with a Homelite Chain Saw can cut more trees in a day than several men could cut with axes or hand saws. Lightweight, easy to handle . . . on every type of cut, felling, bucking, notching or trimming . . . a Homelite cuts through an 18 inch pine in 16 seconds . . . an 18 inch oak in 28 seconds . . . and it handles trees 48 inches or more in diameter.

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Materials decontrol unlikely

Don't look for building materials to be taken out from under price control.

Here's a top official of the Building Materials Branch of the Office of Price Stabilization talking:

"All of the building materials industries come in asking for decontrol. But it's out of the question for any major part of the industry. There won't be any decontrol unless we get direct orders from the top—either from our own bosses or from Congress."

Gravestones have been decontrolled ("not important to the cost of living"). So are building wreckers (it's a service "which cannot practically be controlled.") But this kind of decontrol is about all you can expect.

The new price chief, Ellis Arnall, isn't likely to begin decontrolling any important item. And stabilization administrator Roger Putnam, who rides herd on both wages and prices, is also strongly on record against decontrol.

• **Fear "boomerang"**—Congress would like to write some decontrol into the new controls law it has to pass before June 30. But Congressmen fear taking any drastic action that might boomerang on them on election day. They may write in some provision giving the administrators authority to put controls on a "standby" basis—but they'll leave it up to Truman and his aides to decide. And as of the moment, all the controllers from Truman on down are solidly against any decontrol, despite their talk about "surveying the decontrol situation."

Instead, officials who are responsible for ceilings on building materials are hard at work on new regulations for the scores of industries and hundreds of items involved. Their object: to give each industry a price regulation that's as easy to live with as it can be made and still be within the law and OPS policy.

This is being done for items where the market price is close to ceilings, and for items that are selling well below ceilings.

Most building materials industries are operating either under the general ceiling price regulation—the "freeze" of a year ago—or under the general manufacturers' regulation, CPR 22. "Tailored regulations" for each industry or dollars and cents ceilings are in the works for most building materials, which is the kind of ceiling the controllers want to establish wherever they can. But until these are applied, many lines are being put under "interim regulations" designed to make it easier for producers to live under the GCPR or CPR 22.

Complaints to OPS indicate that the ceiling prices are worrying some manufacturers who produce items that sell for a uniform price, regardless of make. This includes builders hardware, cast iron boilers and radiators, vitreous china, enameled iron fixtures, tubular brass fixtures, insulating boards, heat controls, and other items.

For sellers of these things, competition has made the low ceiling price of a one manufacturer the market price for all manufacturers, including those who have higher ceilings on their own product. So some manufacturers are complaining to OPS that this situation has depressed sales—that distributors see one manufacturer's price lowered, and have withdrawn from the market to wait out a price shakedown if they can. But OPS officials figure there are other reasons for slow sales other than workings of the regulations.

In general what the controllers are trying to do is provide for all the uniform price products a uniform percentage increase—like the ones listed above—to be applied to prices for a base period when price relationships were "normal," or at least more normal than they were when the general freeze went into effect a year ago.

Good example of the dollars-and-cents ceilings is the one issued at the end of January for western softwood plywoods. In general, it establishes mill prices derived by averaging January-February 1951 prices separately by type, grade, and thickness. The regulation includes nine tables of prices for plywood, and a formula for figuring the price of Douglas fir veneers.

On plywood, some exterior grades were raised from three to six dollars per thousand above the GCPR price level "to insure an adequate supply to meet the requirements of the defense mobilization program." Offsetting reductions in ceilings were made on some items of interior plywood "in order to restore a more normal price pattern."

This is the kind of ceiling in the works at OPS for most species of lumber. The fir ceiling was expected to be the first one out, with orders on southern hardwoods, Ponderosa pine, yellow pine, New England softwoods, and other kinds of lumber coming along within 60 to 90 days.

Price controls on metals used by builders—structural steel, copper tubing, lead, etc.—are in the political spotlight, and for that reason won't be changed except by decisions by the topmost mobilizers. Steel is a good example. Outcome of the wage negotiations are critical—and a settlement that provides for a price increase in steelworkers' wages is bound to run through all the metal-producing and metal-working industries.

Pioneer acquires Jaeger's BP-5 bituminous paver

Pioneer Engineering Works, recently acquired by purchase from Jaeger Machine Co. its Model BP-5 bituminous paver. Through this acquisition, Pioneer acquired exclusive rights to manufacture the paver under its various patents.

The Jaeger company will continue to manufacture its aggregate spreaders as well as its spreaders and finishers used for both concrete and bituminous pavements.

The paver will be built in the Minneapolis plant and will be handled by authorized Pioneer distributors.

By addition of this paver, Pioneer has rounded out its bituminous equipment line. Prior to the acquisition of the Jaeger BP-5 paver, Pioneer was in a position to build all the units used in preparation of bituminous paving material, but had no machine for laying mix on the highway.

Melvin Ovestrud, president of Pioneer, points out that this new paver now makes it possible for a contractor to use Pioneer equipment in every step of the process from raw material to finished surface.

Price ceilings upped on builders hardware

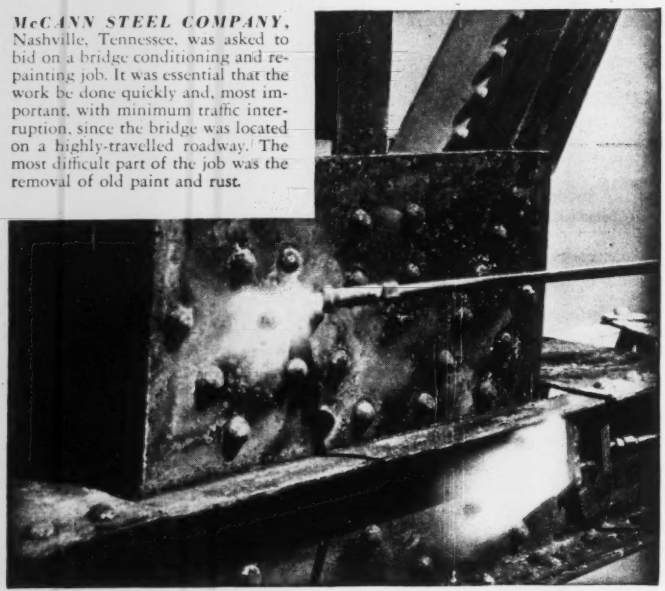
The Office of Price Stabilization last week authorized higher price ceilings on builders hardware.

The new regulation permits the manufacturers to increase their price ceilings as follows: Hangars, tracks and garage doors hardware, 2%; butts and hinges, 3%; and general builders hardware, 3.5%.

(Continued on next page)

Oxyacetylene Flame Cleaning speeds bridge repainting —without traffic interruption

McCANN STEEL COMPANY, Nashville, Tennessee, was asked to bid on a bridge conditioning and repainting job. It was essential that the work be done quickly and, most important, with minimum traffic interruption, since the bridge was located on a highly-travelled roadway. The most difficult part of the job was the removal of old paint and rust.



F. T. Wilson, Airco technical sales service representative, recommended oxyacetylene flame cleaning to remove scale and old paint prior to repainting. This process, requiring minimum equipment, leaves a warm, clean surface, which is conducive to a long-lasting paint job. Notice in the photograph how the rivet heads are being cleaned with a round tip and the flat surface is being conditioned with a wide flat tip.

The entire bridge was cleaned most satisfactorily, without disrupting traffic too greatly. City officials were very pleased. Bids for reconditioning a second bridge across the Cumberland River will specify the use of flame cleaning.

If you have steel structures exposed to the elements, requiring long-time paint protection, investigate the advantages of Airco oxyacetylene flame cleaning. For technical service or copies of bulletins ADG-1066A, ADG-1067 and ADR-57, describing this process, please write your nearest Airco Office.

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Construction business . . .

State budgets $200 million for 1952-53 construction

The California legislature, when it meets March 3, will be asked to appropriate $95.9 million for capital outlay, excluding highway construction.

The highway budget, about $103 million, has been prepared by the state highway commission. The legislature has no control over the road building expenditures.

Governor Earl Warren submitted the capital outlay budget in announcing an overall $1 billion spending program for the state in the 1952-53 fiscal year.

Largest amounts in the capital budget are $17.5 million for state colleges and department of education construction; $14 million building program for the University of California; $12 million to cover cost increases on current projects; and $9.4 million for prison construction.

Business briefs . . .

• **Asphalt, tar products decline**—Shipments of all major types of asphalt and tar roofings and siding products reached a low point for 1951 in December, according to the Census Bureau. Decreases of major items amounted to 55, 40, 38 and 27% respectively for insulated brick siding, asphalt roofing, asphalt sidings and saturated felts. For the year, shipments of saturated felts, asphalt sidings and insulated brick sidings were up slightly, while shipments of asphalt roofing were down 10%.

• **Cost index**—The Associated General Contractors Construction Cost Index for January remained unchanged from the December, 1951, reading of 380. In January, 1951, the index reading was 374.

• **Cement output**—The portland cement industry produced 246 million barrels of finished cement in 1951—9% more than in 1950, according to the Bureau of Mines. Shipments for the year totaled 241.3 million barrels, 6% higher than in 1950.

Defense housing . . .

• **Defense housing**—The Housing and Home Finance Agency has programmed another 750 units of defense housing for the Tucson, Arizona, area, and 125 homes for personnel at Fort McClellan and the Anniston Ordnance Depot in Alabama.

Scooteney pumping plants, and laterals, Wash.

Upper and Lower Scootenay pumping plants for the Columbia Basin Project, Ephrata, Washington require three structures: the Upper, to house 3 main electric motor driven, horizontal, centrifugal type pumping units; the Upper relift pumping plant with 1 main electric motor-driven, horizontal, centrifugal type pump and the Lower with 3 main electric motor-driven, vertical-shaft pumping units. Bids taken Nov. 29, 1951 at Ephrata by the Bu. of Reclamation, L. V. Downs, Supervising Engineer, brought in a low of $234,261 which is 6% below the engineer's estimate.

Work also includes completing all metal work, electrical equipment installation, construction of a gravel surfaced access road and pump discharge line for each plant, excavation and earthwork for laterals and construction of service yard and switchyard, also erection of a steel switch and takeoff structure for each plant. Work was to begin within 30 days and be completed within 305 calendar days. The work is 16 miles southwest of Othello, Washington.

The Government furnishes these materials: all lubricating oil and grease, the 7 main motor-driven pumps complete, except motor controls for the two Upper plants, water for testing pump discharge lines, trashracks, the 2, 300-v motor-control equipment for Lower Scooteney pumping plant, the 3-phase transformers and accessories, the 34, 500-v gang-operated disconnecting switches and fuse disconnecting switches.

Bidders include:

1C	Hunt & Willett, Inc., Wenatchee, Wash.	$234,261
2	Intermountain Plumbing Co. & Henry L. Horn, Moses Lake, Wash.	240,992
5	Cherf Bros. Constr. Co., Ephrata	307,177

Bids: 11-29-51 Items	Unit	Quantity	Unit prices 1 C	 2
Exc, for struct, com	cy	8,500	$1.51	$0.60
rock, for struct	cy	120	7.48	4.00
for lats, com	cy	24,000	0.71	0.30
for conc disch pipe trenches rock	cy	1,000	4.03	4.00
com	cy	5,700	0.69	0.40
for access road, com	cy	1,000	1.84	0.40
Compact embank	cy	2,600	1.24	1.00
Backfill about struct	cy	3,100	0.46	0.30
in conc disch pipe trenches	cy	6,700	0.56	0.25
Comp bf about struct	cy	2,900	0.92	2.50
in concrete discharge pipe trenches	cy	1,000	0.92	2.50
F&p grav surf	cy	700	4.14	6.00
Gravel backfill	cy	30	6.33	6.00
18" riprap	cy	50	3.45	12.00
12" riprap	cy	70	3.45	14.00
Grav bedg under riprap	cy	20	5.75	6.00
Dr holes for anchor bars and gr rods, & gr in pl	lf	80	0.92	5.00
F&h cement	bbl	1,600	6.30	6.25
F&p reinf bars, ½" & smaller	lb	12,000	0.145	0.17
⅝" to ⅞"	lb	60,000	0.134	0.16
1" & larger	lb	22,000	0.128	0.15
Conc in pumping plant struct	cy	420	77.74	68.00
in misc struct	cy	250	51.75	68.00

Bids: 11-29-51 Items	Unit	Quantity	Unit prices 1 C	 2
F&i 12"ss conc culv pipe	lf	20	3.29	2.50
15"	lf	20	4.44	3.25
F&i conc pres pipe symbol 18NC 25	lf	179	6.38	6.00
symbol 18NC50	lf	152	6.56	6.15
symbol 18NC75	lf	88	7.36	8.50
symbol 18NC100	lf	94	8.74	8.75
symbol 18NC125	lf	103	8.86	9.00
symbol 18NC150	lf	144	10.12	10.00
symbol 30NC25	lf	640	10.86	11.00
symbol 30NC50	lf	420	11.16	11.25
symbol 30NC75	lf	170	11.38	11.75
symbol 30NC100	lf	100	12.01	12.00
symbol 48NC25	lf	310	21.16	19.10
symbol 48NC50	lf	295	22.48	20.30
symbol 48NC75	lf	245	24.49	21.00
symbol 48NC100	lf	120	25.30	22.70
symbol 48NC125	lf	102	26.79	24.00
Inst 3 main mot-dr, vert-shaft pump units	lb	57,000	0.043	0.30
4 main mot-dr, horiz, cent pump units	lb	28,500	0.362	0.35
F&i 2 vacuum pump units & 4 air and vac valves	ls	1	1,320.00	1,500.00
F&i manifolds, surge tank, and steel discharge pipe	lb	32,000	0.437	0.60
F&i screwed steel pipe, vlvs, & ftgs for the priming piping	lb	180	1.73	1.50
F&i pipe hgrs & supts	lb	50	2.30	1.50
F&i screw-lift gates	lb	160	0.741	0.65
flap gates	lb	1,200	0.744	0.80
anchor bolts	lb	600	0.54	0.60
hatch covers & gratings	lb	800	0.47	0.85
misc metalwork	lb	3,000	0.70	0.85
Inst trashracks	lb	1,500	0.10	0.40
F&er chain-link fences	lf	370	7.02	6.00
F&er steel swyd struct	lb	8,400	0.427	0.38
F&i grounding sys for pump plants	lb	375	1.73	1.50
F&i gr sys for swyds, excl of gr rods	lb	265	1.73	1.75
F&i ¾" cop-cov gr rods in switchyards	rods	32	10.30	16.00
F&i embed & buried elect met cond, ¾"	lf	325	0.80	1.00
1"	lf	70	0.98	1.30
1½"	lf	15	1.38	2.10
2½"	lf	60	2.87	3.10
3"	lf	160	3.29	4.75
3½"	lf	40	4.60	6.00
4"	lf	60	5.75	7.25
F&i exposed elec met cond, ¾"	lf	140	0.81	1.10
1"	lf	10	0.98	1.40
1½"	lf	15	1.61	2.00
2"	lf	25	2.30	3.00
2½"	lf	20	3.45	3.25
3"	lf	55	5.18	5.00
3½"	lf	20	6.33	6.25
4"	lf	15	7.76	9.00
F&i single-cond, No. 12 AWG, 600-v ins elect wire	lf	1,300	0.10	0.09
F&i single-cond, 250,000-circ mil, 600-v ins elect cable	lf	375	1.65	1.40
500,000-circ mil, 600-v	lf	230	2.68	2.40
600,000-circ mil, 600-v	lf	200	3.22	2.75
F&i single-cond, No. 1/0 AWG, 5,000-v ins elect power cable	lf	275	1.84	2.00
300,000-circular mil, 5,000-volt	lf	320	3.68	5.50
Inst mot-cont equip at Lower Scooteney Pumping Plant	ls	1	1,104.00	1,500.00
F&i mot-cont & sta-serv switchboard at Upper Scooteney Pumping Plant	ls	1	7,222.00	6,500.00
F&i mot-cont equip at Upper Scooteney Relift Pumping Plant	ls	1	3,737.24	3,200.00
F&i float switches	ea	4	195.00	320.00
F&i lighting fixtures at pump pls	ea	4	109.25	85.00
in swyds	ea	2	103.50	85.00
F&i plug receptacles at pump pls	ea	4	23.00	18.00
in swyds	ea	2	23.00	20.00
Inst power transf compl with oil and tank-mounted lightning arresters for Lower Scooteney switchward	lb	18,000	0.034	0.06
for Upper Scooteney switchyard	lb	9,000	0.04	0.06
Inst distr transf, compl with oil and tank-mounted lightning arresters for Upper Scooteney relift switchyard	lb	6,500	0.04	0.06
Inst 34.5-kv, gang-operated discon switches in switchyards	ea	3	230.00	360.00
Inst 34.5-kv, fuse discon swi in swyds	ea	9	46.00	140.00
F&i 1" iron-pipe-size cop tub, connectors, and ftgs in swyds	lb	300	1.73	2.25
F&i tubing supporting insrs in swyds	lb	900	1.38	1.00

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Is the point of initiation important?

Which is the best point of initiation to get complete confinement of the explosives gases?

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Under what conditions does detonation from the *bottom* of the hole improve results greatly?

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How can milli-second delays be used to best advantage?

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NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

▲ Mass., Boston—B.A. 3/6—Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass., sewer tunnel, North Metropolitan Relief Tunnel, main drainage tunnel, Contr. 195 for making core borings, holes up to maximum depth about 850 ft. Total est. $8,000,000. Plans deposit $5. CD 1/15.

BIDS ASKED—BUILDINGS

† Conn., New London—BUILDING—B.A. 3/6—Third Naval Dist., Federal Office Bldg., 90 Church St., New York, 7, N. Y., addnl. Infirmary Impatient Facilities Bldg. 94, Spec. 31914, U. S. Naval Submarine Base. Plans deposit $10.

▲ Mass., Holden—SCHOOL—B.A. 3/7—Towns, at office of Supt. Schools, Holden, Wachusett Regional School Dist. Comn., Mr. Goulding Warren, treas., Laurelwood Rd., Holden. Regional High School for towns of Holden, Paxton, Princeton, Rutland and Sterling, $1,500,000. Plans deposit $150; roads, walks, paving, general grading, $60,000, plans deposit $25; finish grading, seeding, general planting, 60,000, Plans deposit $50. Extended date. L. W. Briggs Assoc., Inc., 90 Park Ave., Worcester, archt. Geo. B. Cabot & Assoc., 45 Bromfield St., Boston, landscape engrs. CD 2/4.

▲ Mass., Medford—HOUSING—B.A. 3/12—City Housing Auth., 85 Salem St., Medford, PHA 15-1, housing, Wilis Ave. $1,821,818, D'Orsi & Co., 184 Boylston St., Boston, archts. Plans deposit $50. CD 11/7/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

John De Michill & Bros., Inc., 58 High St., Torrington, Conn. LB $245,416, est. $210,000. hy. reconstr., S 22 (3), Great Barrington;

Collina Bros., 189 Roosevelt Ave., Springfield, Mass. LB $129,840, est. $133,200. hy. reconstr., Deerfield;

David J. Roach, 55 Spring St., East Bridgewater, Mass. LB $222,577, est. $231,000. hy. work, steel stringer bridge, Woods Hole across New York New Haven & Hartford Railway, Falmouth.

Forrest Constr. Co., 60 Lennox St., Norwood, Mass. LB $137,486. hy. and bridge work, Marshfield and Scituate. Bids Feb. 12. CD 1/30.

Associated Constr. Co., 1010 Wethersfield Ave., Hartford, Conn., CA, $864,000, sewage treatment plant, Pitkin St., Contr. 52-1, East Hartford, HARTFORD, CONN. Bd. Contr. & Supply, Metropolitan Dist., 115 Broad St., Hartford, Conn. Bids Jan. 31. CD 2/7 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Concrete Construction Co., 11 Garfield Ave., Chelsea, Mass., CA, $1,052,800, Elementary SCHOOL, addns., alterations, to existing JUNIOR HIGH SCHOOL, altering Pickering Junior HIGH SCHOOL, Cosmo Ave., LYNN, MASS. City School Dpt., 42 Franklin St., Lynn, Mass. Bids Jan. 29. CD 2/5, under LB.

Magnolia Gardens, Inc., c/o Jack Cooper, 35 Farmington Ave., Hartford, Conn., Owner Builds. $800,000, 2 story APARTMENTS Magnolia and Enfield Sts., HARTFORD, CONN.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ N. J., Raritan—HARDSTANDING AREAS—B.A. 4/27 U. S. Eng., 80 Lafayette St., New York 13, N. Y., hardstanding areas at Raritan Arsenal. $1,790,000, Extended date. Frank Grad, 48 Commerce St., Newark, engr. CD 12/21.

SOON LETS CONTRACT—BUILDINGS

▲ N. Y., Glen Oaks—HOSPITAL—Long Island Jewish Hospital, c/o Louis Abrahamson, archt., 25 N. 45 St., New York 19, N. Y., soon lets contract hospital, 76 Ave., south of Hewlett Ave. Bids Jan. 10 rejected, LB $5,107,000. CD 1/15, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Wm. M. Moore Building Co. and Lopier Constr. Co., 75 W. 190 St., New York, N. Y., CA, $6,434,900, construct Welfare Island Bridge over east channel of East River connecting Welfare Island with Queens Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York, 7, N. Y. Bids Dec. 12. CD 12/13, under LB.

▲ PENNSYLVANIA—State Hy., Dpt., North Office Bldg., Harrisburg,

A. E. O'Block, Unity, Pa., CA, $1,124,201, 11.56 mi. imprvt., 3.14 mi. of which is on relocation from Armagh Boro-westerly, and from Conemaugh River Bridge-northerly, U.S. 22 and T.R 259, in East Wheatfield and West Wheatfield Twps., Indiana Co. Bids Feb. 1. CD 2/5, under LB.

Dresser Equipment Co., c/o Ross Enterprises, 1628 McFarland Rd., Pittsburgh, Pa., CA, $741,491, 2 one story, 140 x 270 ft., prefabricated hangars, Greater Pittsburgh Airport, Moon Twp., PITTSBURGH, PA. Bd. Comrs., Allegheny Co., County Office Bldg., Pittsburgh, Pa. CD 11/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ George F. Driscoll & Moccia Constr. Corp., 41 E. 42 St., New York 17, N. Y., CA, $3,743,743, general contract Cooper Park HOUSES (Proj. No. NY-5-23) in area bounded by Kingland Ave., Frost St., Morgan Ave., Jackson St., Debevoise and Maspeth Aves., Brooklyn Boro, BROOKLYN, N. Y. New York City Housing Auth., 63 Park Row, New York 7, N. Y. Bids Dec. 18. CD 1/17, under LB.

▲ Corbetta Constr. Co., 220 E. 42 St., New York 17, N. Y., LB $4,859,000, general contr.;

Heating Maintenance Corp. of New York, 220 E. 138 St., New York 51, N. Y., LB $659,860, heating and ventilating;

Herman H. Schwartz, Inc., 391 Fulton St., Brooklyn 1, N. Y., LB $376,970, electrical work;

Far Plumbing Co., 2018 Crotona Parkway, New York 60, N. Y., LB $566,500, plumbing for Baruch HOUSES, Proj. NY 5-12, Sect. 1, incl. Bldgs. 1, 2, 3, 4, 5 and 7 in area bounded by Franklin D. Roosevelt Dr., Delancy St., Baruch Pl., Stanton Sts., southerly portion of block bounded by Lewis, Rivington, Stanton Sts., and Baruch Pl. and block bounded by Franklin D. Roosevelt Dr., Stanton, Mangin and E. Houston Sts., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 63 Park Row, New York 38, N. Y. Bids Feb. 8. CD 2/7.

White Constr. Co., 95 Madison Ave., New York 16, N. Y., CA, $500,000, OFFICE, ELIZABETH, N. J. New Jersey Bell Telephone Co., 540 Broad St., Newark, N. J. Voorhees, Walker, Foley & Smith, 101 Park Ave., New York 17, N. Y., archts.

▲† Tandy & Allen, Inc., Pascack Rd., Hillsdale, N. J., CA, $5,065,470, SCHOOL, FORT MONMOUTH, N. J. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Jan. 4. CD 12/19.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

La., Lake Charles—B.A. 3/5—City, City Hall, street paving $735,000. Extended date. CD 2/18.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
B.A. Bids Asked
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

BIDS ASKED—BUILDINGS

▲ La., New Orleans—B.A. After 3/15—MEDICAL SCHOOL—State of Louisiana, New Orleans, 8 story, 100,000 sq. ft. addn. to Louisiana State University Medical School. Approx. $1,000,000. Andry & Feibel, Smith & Padgett, and August Perez & Assoc., Audubon Bldg., New Orleans, archts. CD 8/10/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Smith-Gray Electric Co., 710 3 Ave. Columbus, Ga., and Georgia Electric Co., Albany, Ga., CA, $757,432 electric dist. sys. at Marine Corps Depot, ALBANY, GA. Dpt. Navy, Office in Charge of Construction, Box 365, Naval Base, S. C. Bids Feb. 12. CD 2/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Forman Constr. Co., 229 E. Wisconsin Av., Milwaukee, 2, Wis., CA, $2,000,000, POST OFFICE annex, MIAMI, FLA. Harvey Realty Co., 229 E. Wisconsin Ave., Milwaukee, 2, Wis. U. S. Post Office Dpt., lessee. CD 11/15.

▲ Mayben & Sons Constr. Co., Gadsden, Ala., CA, $1,411,600. WAREHOUSE, GADSDEN, ALA. Goodyear Tire & Rubber Co., Gadsden, Ala. Bids Jan. 15, awarded Feb. 13. CD 1/22, under LB.

J. Gordon Lee, National Bank of Commerce Bldg., New Orleans, La. CA Approx. $850,000. Mfg. PLANT, NEW ORLEANS, LA. Edwin H. Fitler Co., 5625 Tacony St., Phila., Pa. Bids Jan. 28. CD 1/14.

▲ Henry C. Beck Co., First National Bank Bldg., Atlanta, Ga., CA, $3,020,482, HOUSING units, NEWPORT, KY. Newport Housing Comn., Newport, Ky. Bids Feb. 8 CD 2/18, under LB.

▲ Henry C. Beck Co., First National Bank Bldg., Atlanta, Ga. LB Type 1 $3,020,982, Type 2 $3,013,000. two hundred eighty-three 2 story DWELLING units, Ky 15-2; forty-two 2 story DWELLING units, Ky 15-2, NEWPORT, KY. Newport Housing Comn., Newport, Ky. Bids Feb. 8. CD 1/23.

Stevens Constr. Co., Cairo, Ill. CA $975,000. 100 DWELLING units, Proj. Ky 6-4, PADUCAH, KY. Paducah Municipal Housing Comn., Paducah, Ky. Bids Jan. 28, awarded Feb. 14. CD 2/1, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Ill., Franklin Park—FACTORY—B.A. 3/4—Binks Mfg. Co., 3124 W. Carroll St., Chicago, 1 story, steel factory, $600,000. Graham Anderson Probst & White, 80 E. Jackson Blvd., Chicago, Zone 4, archts. CD 10/10.

▲ Ill., Midlothian—SCHOOL—B.A. 3/4—School Dist. 228, 16915 S. Oak Park Ave., 2 story, steel, concrete community high school, 152 and Crawford Sts. $1,175,000. Chas. W. Nicol, 23 E. Jackson Blvd., Chicago, Zone 4, archts. CD 12/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ OHIO—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 5, rejected bids Feb. 5, Type T-35 and structures 1.287 mi. SR 732-9.72, S-662 (1), village of Oxford, Butler Co. LB $328,585; Type T-71 and structures 9.728 mi. USR 127-17.31, F-578 (7), Darke Co., LB $1,865,314; Type T-35 on B-20 and structure 0.288 mi. CR 83, S-296 (1), Trumbull Co., LB $189,626. CD 2/14, under LB.

▲ OHIO—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 5.

Merritt-Chapman & Scott Corp., 1648 Standard Bldg., Cleveland, O., CA, $2,142,397, est. $2,451,100, structure 0.178 mi. Part 1 of Toledo Expressway Sys., incl. river piers of Maumee River Bridge, Bridge No. LU-120-35, city of Toledo, S.R. 120, Sect. 3.46, UI-1052 (2), Lucas Co. Bids Feb. 5. CD 2/14, under LB.

▲† James I. Barnes Constr. Co., 6 Bechtle Ave., Springfield, O., CA, $4,378,295, thirteen 3 story, 34x220 ft., dormitories, four 1-story, 112x152 ft. Mess and administration bldgs. combined with boiler rooms incl. walks, utilities, Serial No. ENG 46-022-52-88, Lockbourne Air Force Base, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Jan. 16. CD 1/11.

▲ Great Lakes Dredge & Dock Co., 122 S. Michigan Ave., Chicago, 3, Ill., CA, $1,875,000, bulkhead construction and filling, EAST CHICAGO, IND. Inland Steel Co., 38 S. Dearborn St., Chicago, Ill. Fred Johnson, c/o owner, engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Poirot Constr. Co., 200 Pershing Rd., Chicago, 9, Ill., LB, $1,547,000, 2 story, bsmnt., stone, concrete face brick HIGH SCHOOL, Golf and Forest Rds.,

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RIVERSIDE, ILL. Riverside-Brookside High School, Riverside, Ill., Bids Feb. 11. CD 1/16.

▲ Cunningham Bros., 359 E. Grand Ave., Beloit, Wis., CA Est. $13,300,000, incl. equip. POWER PLANT, JANESVILLE, WIS. Wisconsin Power & Light Co., 122 W. Washington St., Madison, Wis. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill., engrs. CD 4/27.

▲ Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit, Mich., CA $1,100,000, 1 story, 120,000 sq. ft. brick, steel, TESTING BUILDING;

Douglas-Cloud Co., 1017 Penobscot Bldg., Detroit, Mich., CA $150,000, brick, pig cast MACHINE HOUSE, Foreman's OFFICE, WASH ROOM and LOCKER ROOM, DEARBORN, MICH. Ford Motor Co., Rouge Plant, 3000 Schaefer St., Dearborn, Mich. CD 1/2 and 6/7/46.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲† Texas—B.A. 3/24—U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, completion of embankment and construct spillway, Belton Dam and Reservoir, Leon River, near Belton, Inv. No. CIVENG 41-443-52-37. Approx. $1,000,000. CD 6/9/43.

▲† Tex., El Paso—LABORATORY, etc.—B.A. 3/26—U. S. Eng., Box 1538, Albuquerque, N. M., (A) 2 story, approx. 36,000 sq. ft. bsmt., concrete, structural frames guided missile laboratory, classroom bldg. shop. Approx. $500,000, (B) outside utilities, incl. water, sanitary sewer and gas lines, underground and overhead electric distr. sys., Approx. $60,000 (C) paved parking areas 8" base course, 2 in. hot-mix b. conc. wearing surf. 18,000 sq. yds., Approx. $75,-000, at Fort Bliss, Serial No. ENG 29-005-52-31. CD 7/6.

BIDS ASKED—BUILDINGS

▲ Kan., Garden City—SCHOOL, etc.—B.A. 3/6—Bd. Educ., School Dist. 1 Finney Co., Garden City, high school and junior college bldg. $1,000,000. J. W. Radotinsky, 1401 Fairfax Trafficway Kansas City, Kan., archts. CD 11/22/50.

Colo., Pueblo—SCHOOL—B.A. 3/26—School Dist. 60, 119 Colorado Ave., 2 story, Nettie Freed Junior High School, 20 Ave. and West St. $850,000. Walter De Mordaunt, 738 Thatcher Bldg., engr. CD 10/23/50.

▲ Tex., Fort Worth—REFINERY—Bids Asked—Premier Petroleum Co., Mt. Olivet Rd., 4,300 bbl. daily capacity Catalytic cracking refinery unit, $950,000; 350 bbl. daily capacity polymerization refinery unit, $350,-000. CD 8/23.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Western Contg. Co., 400 Benson Bldg., Sioux City, Ia., CA. $2,228,354, earthwork, Stage 2, Oahe Reservoir Proj., Inv. 52-48, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb., Bids Jan. 9. CD 1/14, under LB.

▲† Cook Constr. Co., Hy. 80 W., Jackson, Miss., CA, $1,266,246, est. $1,122,938, construction Kirwin Dam foundation on Solomon River, near Kirwin, Missouri River Basin Proj., Spec. DC 3633, KANSAS. Bureau Reclamation, Dpt. Interior, Kirwin, Kan. Bids Jan. 31, awarded Feb. 8. CD 2/6, under LB.

▲† Walter Nashert, 16 N. E. 27 St., Oklahoma City, 5, Okla., CA. $2,209,500, est. $2,500,000, jet engine test facilities at Tinker Air Base, OKLAHOMA CITY, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Jan. 8, Awarded Feb. 6.

▲ Smith Contg. Corp., 205 N.W. 7 St., Fort Worth, Tex. CA Approx. $4,000,000, 175 mi. 16 in. pipe line from Corsicana to East Houston, TEXAS. Texas Pipe Line Co., Texas Co. Bldg., Houston, Tex. CD 12/5.

St. Charles Pipe Line Co., c/o Western Natural Gas Co., National Standard Bldg., Houston, Tex., Own Forces. Approx. $992,798, 12 in. natural gas pipe line from north Aransas County to aluminum plant near GREGORY, TEX. CD 8/15.

▲† F. S. Oldt & C. E. Small, 403 S. Haskell St., Dallas, Tex., LB $1,799,943, est. $1,865,011, airmen's barracks at Camp Wolters Air Force Base, Inv. No. ENG. 41-443-52-16, MINERAL WELLS, TEX. U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, Tex. Bids Feb. 15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Burton W. Duenke Building Co., 1112 Ruth Dr., St. Louis 22, Mo. Own Forces, $2,500,000, 300 concrete, glass RESIDENCES, Ridgewood Subdivision adjacent to U. S. No. 66 and Grant Rds., ST. LOUIS COUNTY, MO.

Fausett & Co., 215 Louisiana St., Little Rock, Ark., Owner Builds $600,000, MEDICAL CENTER, LITTLE ROCK, ARK. CD 2/12.

▲ Constant Constr. Co., Lawrence, Kan., LB, $1,118,-275, general contract, Senior High SCHOOL, LAWRENCE, KAN. Bd. Educ., Lawrence, Kan. Bids Feb. 1. CD 1/16.

▲ T. C. Bateson Constr. Co., Irwin-Keasler Bldg., Dallas, Tex., CA. $2,828,910, 2 WAREHOUSES for Red River Arsenal, Inv. No. ENG 34-066-52-17, TEXARKANA, TEX. U. S. Eng., Box 61, Tulsa 2, Okla., Bids Jan. 29. CD 2/5, under LB.

FAR WEST

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Peter Sorensen, 927 Arguello St., Redwood City, Calif., CA. $825,571, Schedules 1 and 2;

Kevry Constr. Co., 705 San Leandro Blvd., San Leandro, Calif., $51,450, Schedule 3, water treatment plant, PITTSBURG, CALIF. City, J. M. Cardinalli, Jr., city clk., City Hall, Pittsburg, Calif. Bids Jan. 31, awarded Feb. 11. CD 2/11, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† Acme Constr. Co., 827 13 St., Modesto, Calif., LB, $884,498, Elementary SCHOOL, TRAVIS AIR FORCE BASE, CALIF. Housing & Finance Agency, 718 Flood Bldg., San Francisco, Calif. Bids Feb. 7.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† A. J. Hopper Co., 345 Franklin St., San Francisco, Calif., LB $738,747, est. $518,882, utility distr. sys. south of Ship Creek, ANCHORAGE, ALASKA. The Alaska R.R., Dpt. Interior, Anchorage, Alaska. Bids Feb. 11. CD 1/29.

CANADA

BIDS ASKED—BUILDINGS

▲ Ont., Galt—HOSPITAL—Bids Asked—South Waterloo Hospital Corp., Lincoln St., 4 story, bsmnt., 45x324 ft. main bldg. and 45x90 ft., steel frame, concrete hospital. $1,300,000. Allward & Gouinlock, 57 Bloor St. W., Toronto, archts. CD 10/27/50.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Foundation Co. of Canada, Ltd., 1220 Bay St., Toronto, Ont., CA Est. $2,500,000 waterworks plant exten. 10 m.g. addn., 48 in. intake pipe, pumphouse, tunnel and shaft, 200x200 ft. water filtration plant, TORONTO, ONT. Scarborough Public Utilities Comn., 1660 Kingston Rd., Toronto, Ont. CD 3/26.

Proposed Projects

WATER SUPPLY

Calif., Ontario—City, $750,000, bond election Apr. 18, wells and reservoirs.

▲ Calif., San Diego—City, Civic Center Bldg., $6,500,-000 bond election Feb. 26, constr. Sutherland Dam and conduit to San Vicente Reservoir. CD 1/5.

N. C., Leaksville—City, bond election Mar. 7, WW imprvs. $453,000. CD 1/15.

Tex., Amarillo—City, City Hall, voted bonds, WW sys. rehabilitation, $375,000; water distr. lines and mains exten.; sys. expansion incl. supply, $475,000. CD 1/15.

Tex., Bronte—City, Unit 1, 350,000 gal. water treatment plant, $75,000; Unit 2, pumping station at Oak Creek Lake, $45,000; Unit 3, water supply main from Oak Creek Lake to city and 10 mi. water mains inside city limits, $230,000. Parkhill, Smith & Cooper, 1414 Avenue J, Lubbock, consult. engrs.

▲ Tex., Midland—City, City Hall, development large water well fields in Northwest Midland County, $1,-500,000. Wm. B. Neeley, city engr. CD 9/21/50.

SEWERS, WASTE DISPOSAL

▲ Calif., Ontario—City, $1,250,000 bond election Apr. 8 outfall and trunk sewer lines. CD 4/29/48.

Calif., San Pablo—San Pablo Sanitary Dist., San Pablo, defeated $400,000 bonds, outfall sewer, pumping station and enlargement of sewer sections. CD 1/7.

Ill., Mount Carmel—City, sewage facilities $500,000. Warren & Van Praag, 253 S. Park St., Decatur, consult. engr.

Ill., Pana—City, plans by Jenkins, Merchant & Nankivil, 605 E. Miller St., sanitary sewers modification and addn. $300,000.

Mich., Vassar—City, Charles D. Manson, sewage disposal plant treatment facilities, $200,000. CD 9/24/45.

▲ N. C., Asheville—City, sewage disposal plant, $2,-000,000. Pelk, Powell & Hendon, Stallings Bldg., Birmingham, Ala., consult. engrs. CD 1/18/51.

N. C., Leaksville—City, bond election Mar. 7, sanitary sewer imprvs. $387,000.

▲ O., Columbus—City, City Hall, 90 W. Broad St., addnl. sewer lines in East Columbus, $1,000,000. Orris Bonney, Columbus, city sewer engr. CD 11/19/45.

▲ O., Findlay—City, City Hall, sewage imprvs. $1,200,-000. Jones, Henry & Schoonmaker, Security Bldg., Toledo, engrs. CD 11/13.

O., Ironton—City, City Hall, sewage disposal plant, $750,000. Paul A. Uhlmann & Assoc., 1441 N.

(Continued on page 60)

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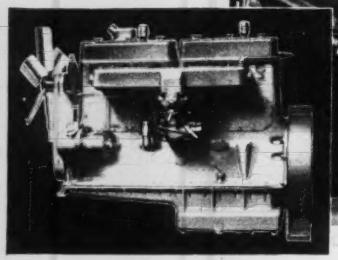
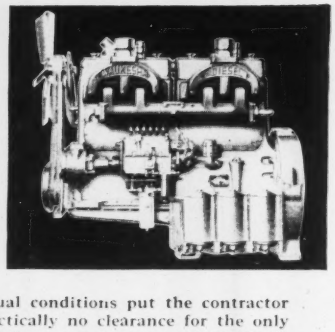


WAUKESHA POWER

166



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NEW YORK TULSA LOS ANGELES

(Continued from page 62)

High St., Columbus, engrs. K. H. Wentz, city engr. CD 11/12/45.

▲ **Pa., Clairton**—Clairton Municipal Auth., sewage disposal plant, sewers, settling tanks, grit chamber, pumping stations, etc. $1,500,000. Laboon & Bankson, 1116 Berger Bldg., Pittsburgh, consult. engrs.

Pa., Tyrone—Tyrone Municipal Auth., Tyrone, sewage disposal plant, $650,000. Lewis Gwin, City Hall, Altoona, consult. engr. CD 9/27/45.

▲ **Tex., Amarillo**—City, City Hall, voted bonds, expansion, imprvs. sanitary sewerage sys. collection lines and existing sys. rehabilitation, $1,100,000; sewage disposal plant, $400,000. CD 12/27.

▲ **Tex., Galveston**—City, City Hall, voted bonds Feb. 9, sewage disposal plant, $1,650,000. Joe J. Rady, 811 Insurance Bldg., Fort Worth, consult. engr. CD 1/24.

▲ **W. Va., Charleston**—City, City Hall, sewage disposal plant, $12,000,000. Settle Eng. Co., Peoples Bldg., consult. engr. CD 3/11/46.

BRIDGES

▲ **D. C., Wash.**—Dist. Comrs., District Bldg., plans by Mills & Petticord, 3308 14 St. N. W., bridge New York Ave. over Pennsylvania R.R., New York Ave. over South Dakota Ave., $1,000,000; bridge 42 and Hunt Sts. N. E., $125,000; bridge, Atlantic Ave., over Oxen Run S. E., $225,000.

Tex., Amarillo—City, City Hall, voted bonds Jan. 15, underpass, $350,000.

Tex., Houston—Harris Co., Court House and Texas & New Orleans R. R. Co., L. A. Loggins, ch. engr., Southern Pacific Bldg., Zone 1, 800 ft. steel supported bridge with elevated roads of 300 ft. length either side, Lockwood Drive Overpass. $800,000. Hugo Zapp, co. engr. CD 2/9/51, under LB.

Wis., Marinette—Chicago & North Western Ry. Co., E. C. Vandenburgh, ch. engr., 400 W. Madison St., Chicago e. Ill., rebuild bridge over Menominee River near White St., 484 ft. long, replacing with 8 deck plate girder spans, concrete pile piers.

Wis., Menominee—Chicago & North Western Ry. Co., E. C. Vandenburgh, ch. engr., 400 W. Madison St., Chicago e. Ill., rebuild bridge over Menominee River near 10 Ave., 455 ft. long replacing 8 deck plate girder spans, concrete pile piers.

QUEBEC—Dpt. P. Wks., Quebec City (Prov. Govt.).

Wakefield—new 1400 ft. bridge to replace present structure over Gatineau River here, St. Pierre de Wakefield. Approx. $500,000. O. Desjardine, c/o owner, engr.

STREETS AND ROADS

Calif., Los Angeles—City, City Hall, resurf. Hill St., First St. to Venice Blvd. $200,000. Lloyd Aldrich, city engr. CD 1/15/45.

▲ **Mich., Dearborn**—City, M. A. Stevens, clk., resurf. 15 mi. streets, c. conc. paving; addnl. 12 mi. various sections, also 3 subdivision streets. $1,250,000. DeWitt Coburn, city engr. CD 8/16/44.

Mich., Sturgis—City, $240,000 bond election in April, paving various streets.

Neb., Omaha—City, City Hall, 13 and Farnam Sts., widn. Farnam St. from 40 to Saddle Creek Blvd. $113,000; widen 42 St. from Dodge to Center Sts. $277,000. E. W. Woodbridge, city engr.

NORTH CAROLINA—State Hy. Comn., Raleigh.

Buncombe Co.—rebuild 8 mi. Rtes. 19 and 23 between Asheville and Burnsville. $700,000.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh.

Forsyth Co.—expressway through Winston-Salem. U. S. Rte. 421 and U. S. Rte. 158. Proj. 7474. $8,000,000.

▲ **N. C., Fayetteville**—City, City Hall, bond election Mar. 4, street imprvs. $1,000,000.

S. C., Columbia—Richland Co., Court House, extend Hayden St. $400,000. CD 2/1/45.

Tex., Amarillo—City, City Hall, voted bonds, street imprvs. and paving, and rehabilitation, $650,000. CD 12/27.

Tex., Galveston—City, City Hall, cancelled Feb. 9 bond election converting 2 side streets paralleling Broadway into thoroughfares. $125,000. Widening, paving 26 St. Avenue K to Seawall, $200,000; converting street on West side crossing Broadway, $150,000. Will set new date soon. CD 2/1.

Tex., San Antonio—City, City Hall, Military Plaza, South Side Expressway Proj. "cut off". $600,000. R. A. Bossy, 520 W. Elmira St., consult. engr. CD 12/14/49.

Wash., Port Angeles—City, City Hall, bond election Mar. 11, paving arterial streets, $625,000. CD 6/8/50.

Ont., St. Thomas—Elgin County, E. Ashton, reeve, Aldborough constr. and maintenance of county and suburban roads portions of County Roads 2 and 8 to be paved. Approx. $436,000.

Ont., Sarnia—Lambton Co., Sarnia, maintenance and county roads in 1952 incl. suburban roads. Approx. $450,000.

EARTHWORK, WATERWAYS

▲ **Calif., Fallbrook**—Fallbrook Public Utility Dist. P. O. Box 427, Fallbrook, Ont., dam and reservoir, near here, $1,500,000. G. F. Yackey, engr. and mgr.

Tex., Galveston—City, City Hall, cancelled Feb. 9 bond election, drainage imprvs. $250,000. Will set new date soon. CD 2/1.

AIRPORTS

▲ † **N. Y., Newburgh**—AIR BASE—U. S. Eng., 80 Lafayette St., New York, Zone 13. Plans by Foster & Cafarelli, 44 Whitehall St., New York, Zone 4, mobile aircraft warning system at Stewart Air Force Base, $500,000-$1,000,000.

Tenn., Memphis—AIRPORT—City, City Hall, plans by Walk C. Jones-Walk C. Jones, Jr., 1215 Poplar Ave., expansion of Memphis Municipal Airport Terminal, new bldgs., etc. Approx. $500,000. CD 1/27/47.

▲ **Tex., Fort Worth**—RUNWAY—Consolidated-Vultee Aircraft Corp., Grants Lane, paving runway at plant, incl. 175,000 sq. yd. 14 in. rein.-con., and 3,000 lin. ft. approx. 10 ft. high retaining wall, $1,250,000. F. C. Clayton, plant engr.

LATIN AMERICA

Mexico, Bosque de Chapultepec—Fundidora y Laminadora Chapultepec, Calzada Molino del Rey, 156, plan's steel foundry, $500,000.

PUBLIC BUILDINGS

▲† **Calif., Los Angeles**—POWER TRANSMISSION LINE—Dpt. Water & Power, 207 S. Broadway, power transmission line in San Fernando Valley to new receiving station on Parthenia St. $11,000,000. CD 2/14/45.

Calif., San Bruno—SCHOOL—San Bruno Elementary School Dist., 875 Angus Ave., plans by Leslie C. Irvin, 251 Post St., San Francisco. Southwest Elementary School, $600,000. CD 10/13/5.

▲ **Calif., Torrance**—SCHOOL—Torrance Unified School Dist., Torrance, $3,000,000 bond election Feb. 26, 1 high school, and 3 elementary schools. CD 3/20/50.

▲ **Calif., Ventura** — COLLEGE — Ventura Union High School Dist., Ventura, plans by A. C. Zimmerman & William Glen Balch, 2933 Rowena Ave., Los Angeles, Junior College, on Telegraph Rd., east of here. $3,000,000. CD 2/15/51.

Colo., Fort Collins—SCHOOL—School Dist. 5, Fort Collins, voted bonds, high school addn., $600,000. Atchison & Kloverstrom, 1264 Monaco Parkway, Denver, consult. engr. CD 12/19.

Ill., Highland Park—SCHOOL—School Dist. 108 plans by Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, 2 and 3 story, bsmnt., Junior High School, $900,000.

Ill., Hinsdale—SCHOOL—School Dist. 18, Hinsdale plans by Fugard, Burt Wilkinson & Orth, 520 N. Michigan Ave., Chicago, Zone 11, Oak Street School, $500,000.

▲ **Ind., Michigan City**—HOUSING—Michigan City Housing Auth., City Hall, plans by Beine, Hall & Curran, 607 Broadway, Gary, 144 residences, $1,400,000.

Kan., Olathe—SCHOOL—Consolidated School Dist. 110, Johnson Co., voted $799,000 bonds, Feb. 2 school. Kivett & Myers, 1016 Baltimore St., Kansas City, Mo., archts. CD 1/30.

▲ **La., Alexandria**—SCHOOLS—Rapides Parish School Bd., Alexandria, $1,280,000 bond election Mar. 11, 3 elementary schools in Ward 1.

La., Chalmette—SCHOOL—St. Bernard Parish School Bd., $780,000 bond election Mar. 11, school imprvs. in School Dist. 1. CD 10/30/50.

Md., Annapolis—SCHOOL—Anne Arundel Co. Bd. Educ., 1 story Lake Shore Elementary School, $500,000.

▲ **Mass., Norfolk**—INDUSTRIAL—State, Dpt. Correction, 126 State House, Boston, plans by Abbott Assoc., 131 State St., Boston, industrial bldg. at State Prison, $1,300,000.

Mass., North Attleboro—SCHOOL—Town, School Dpt., plans by McLaughlin & Burr, 131 State St., Boston, high school addn., Washington St., $650,000.

Mich., Ann Arbor—AUTOMOTIVE LABORATORY—University of Michigan, Harlan H. Hatcher, pres., Ann Arbor, brick, steel automotive laboratory, College Campus, $850,000.

Mich., Lambertville—MUNICIPAL CENTER—City, city clk., brick, steel municipal center, $500,000.

▲† **Mich., Romulus**—PLANT—Dpt. Navy, 18 St. and Constitution Ave. N.W., Wash. 25, D. C., plans by Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, 500,000 sq. ft. main plant bldg., incl. 1 story units to make J-40 jets, on 160 acre site. $50,000,000. Ford Motor Co., 29500 Plymouth St., Livonia, will operate. CD 2/2.

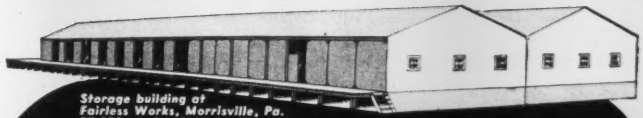
Minn., Hibbing—LIBRARY—City, J. Gazelka, clk., plans by Earl Graffunder, 1719 Kerxes Ave. N., Minneapolis, and Jyring & Jurenes, assoc. archts., Hibbing, 1 story, bsmnt., library, $500,000. CD 3/1/43.

Miss., Brookhaven—PLANT—City, City Hall, $600,000 bond election Mar. 3, mfg. plant for Jacobsen Mfg. Co.

▲ **Miss., Holly Springs**—PLANT—Bd. Supervs. Marshall Co., Holly Springs, mfg. plant for Marshall Mfg. Corp. $1,200,000.

▲ **Mont., Missoula**—SCHOOL—School Dist. 1, Missoula, school addns. to 2 existing schools, and school addn. $1,393,000.

▲† **Neb., Hastings** — AMMUNITION DEPOT — Ninth Naval Dist., Great Lakes, Ill., expansion at U. S. Naval Ammunition Depot, incl. store houses, maga-



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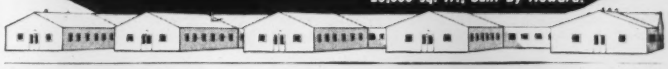

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▲ N. J., Newark—HOUSING—Newark Housing Auth., 57 Sussex Ave., slum clearance and low-rent apartment in 46 acre area north of Broad St. R.R. Station, $24,000,000. CD 9/12/50.

▲ O., East Liverpool—HIGH SCHOOL—Bd. Educ., East Liverpool, plans by Firestone & Motter, 1412 Cleveland Ave., Canton, 2 Junior High Schools, one elementary school, $2,725,000. CD 11/12.

▲ Okla., Oklahoma City—HIGH SCHOOL—Bd. Educ., 400 N. Walnut St., bond election Mar. 25, Junior High School, $4,000,000. Bramblett & Baldwin, Petroleum Bldg., archts. CD 5/2/49.

▲ Pa., Bristol—SCHOOLS—Bristol School Dist. Auth., Bristol, Delmas Junior High School addn., Rogers Ave. $1,000,000; high school at Beaver Dam Rd. and Rte. 13, $1,000,000. CD 7/30/45.

Pa., Morrisville—SCHOOL—Falls Twp. School Bd., Morrisville, plans by Micklewright & Mountford, 72 Ewing St., Trenton, N. J. Fairless Hills Elementary School. Approx. $750,000. CD 12/7/44.

▲ Tenn., Knoxville—HOSPITAL—State Bldg. Comn., State Capitol, Nashville, plans by Baumann & Baumann, 5214 Market St., and York & Sawyer, 101 Park Ave., New York, N. Y., University of Tennessee Memorial Research Hospital. $6,000,000. CD 2/20/50.

▲ Tex., Houston — SCHOOLS — Houston Independent School Dist., 1600 Washington St., plans by Stayton Nunn, 3272 Westheimer Rd., 4 elementary schools, Richmond Rd. and Avenue B, $375,000; 1 at Gulf Freeway and Telephone Rd., $300,000; 1 at south side of Richmond Rd. and west of Avenue B, $350,000; addn. at Stella Link Rd. $300,000; Junior High School, Fairbanks and Hirsh Rd. $800,000. CD 1/28/52 and 11/20/44.

▲ Tex., Houston — SCHOOLS — Houston Independent School Dist., 1600 Washington Ave., plans by Stayton Nunn, 3272 Westheimer Rd., elementary schools, Homes Rd. near Askew St. $400,000; Rosslyn Rd. and LaMonte Lane, $345,000; Rice and Oaks Sts. $325,000; Terry, Finch and McKee Sts. $375,000. CD 11/20/44.

B. C., New Westminister—CITY HALL—City, City Hall, 2 story, rein.-con. city hall at Tipperary Park, $600,000. A. Stewardson, City Hall, city engr. CD 12/18/46.

▲ B. C., New Westminster—POST OFFICE—Dominion Government, Ottawa, Ont., plans by K. J. Sandbrook, 615 Columbia St., New Westminster, and E. Evans & Son, 119 W. Pender St., Vancouver, post office and government office bldg. $2,000,000. CD 10/11/44.

▲ B. C. New Westminster—SCHOOL—New Westminster School Bd., 8 Ave. and 8 St., plans by E. Evans & Son and W. Bow, 119 W. Pender St., Vancouver, 2 story, brick, frame, stucco Senior High School, $1,400,000. CD 3/28.

Ont., Oakville—HOUSING—Central Mortgage & Housing Corp., 414 Queen's Quay W., Toronto, housing development incl. 75 houses on 50 acre site west of here, $750,000 R. P. Opie, c/o owner regional engr.

Ont., Oakville—HOUSING—Govt. of Canada, Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, housing development in western section of town, $750,000. R. P. Opie, 441 Queen's Quay, Toronto, engr.

Ont., Sarnia—COLLEGIATE—Bd. Educ. F. Walker, chn., Sarnia, plans by S. B. Coon & Son, 4 St. Thomas St., Toronto, Collegiate addn. Approx. $520,000. CD 9/24/45.

COMMERCIAL BUILDINGS

▲ Ala., Anniston—HOUSING—U. S. Eng., South Atlantic Div., Box 1889, Atlanta, Ga., construct, manage and finance 175 housing units at Fort McClellan. Approx. $1,250,000. Pearson, Tittle & Narrows, First National Bank Bldg., Montgomery, archts.

Ark., Little Rock—MEDICAL CENTER—Fausett & Co., 215 Louisiana St., plans by Wm. van Valkenburgh, 215 Louisiana St., medical center, Markham and Hayes Sts. $600,000. Chris E. Wright, Terry Bldg., consult. engrs. CD 2/6.

Colo., Denver—HOUSING—Dpt. Navy, Buckley Field Naval Air Station, Denver, construct, manage and finance 3 and 2 story, 92-unit brick frame housing, $920,000. Temple Buell & Co., 730 14 St., engrs. CD 8/6.

▲ Conn., Groton—HOUSING—Public Housing Admin., 125 Trumbell St., Hartford, portable 1 story, frame temporary housing, Submarine Base Reservation, $1,000,000. Hinley Capocello & Assoc., 384 Main St., Bridgeport, engrs.

Conn., Thompsonville—Owner, c/o Thomas Butler, agt., c/o Whittles & Brewer, archts., 15 Lewis St., Hartford, 300 one story, frame, masonry housing.

Fla., Maderia Beach—HOTEL—James A. Pruitt, Maderia Beach, hotel, $750,000.

▲ Fla., Miami—HOSPITAL—North Dade Hospital, Inc., 8677 N.E. 2 Ave., plans by Cedric Start & D. M. Moeller, 1457 Jackson St., Hollywood, hospital. $1,000,000. CD 2/5.

▲ Ill., Chicago—OFFICE—Leonard Constr. Co., 37 S. Wabash St., 20 story office bldg., W. Wacker Dr. and Franklin St. $4,000,000.

Ill., Chicago—CHURCH—St. Constantina Church, 7351 S. Stony Island St., church, $900,000.

▲ Ill., Hillside—HOMES—Glase Bros. Constr. Co., 574 N. Laramie St., Chicago, 150 one story, brick homes, sewers, etc., Madison and Idlewood Sts., $1,500,000.

Md., Upper Marlboro — DWELLINGS — Morris Miller, 8007 Eastern Ave., Silver Spring, plans by Corning & Moore, 1726 M St. N.W., Wash., D. C., fifty-seven 2 story brick apartments, twenty-five 1 story dwellings, 456 units, Oxon Run Hills, Pierra, Ghent & Assoc., 1836 Jefferson Pl. N.W., Wash., D. C., engrs. for roads, sewers, grading.

▲ Mass., West Roxbury—SCHOOL, etc.—Holy Name R. C. Church, Rt. Rev. Charles A. Finn, pastor, 1689 Center St., plans by Perry Shaw & Hepburn, Kehoe & Dean, 31 St. James Ave., Boston, 2 story parochial school and convent. $1,000,000. CD 2/2/50.

Mich., Holland—SEMINARY—Western Theological Seminary, Holland, plans by Kingscott & Assoc., Kalamazoo, seminary, 2 story dormitory, audio-visual classroom, $750,000.

Mo., Kansas City—APARTMENT—Plaza House, Inc., c/o Siezak & Voscamp, archts., 112 E. 10 St., Kansas City 6, Mo., 11 story apartment, 47 St. and Roanoke Parkway, $650,000.

▲ Mo., St. Louis—MEDICAL OFFICE—Hanrose Investment Co., c/o Israel Treiman, secy. 705 Olive St., Zone 1, 10 to 15 story, bsmnt., brick, concrete, steel medical office Kingshighway and West Pine Blvd., incl. razing of bldgs. on site, $4,000,000.

N. Y., Brooklyn—SCHOOL—Roman Catholic Church of St. Anselm, 356-82 St., Zone 9, plans by Henry V. Murphy, 1 Hanson Pl. Zone 17, parish school, 8202-8212 Fourth Ave. $800,000.

N. Y., Brooklyn—APARTMENT—Shoreham Apartments, Inc., 657 E. 26 St., plans by Philip Birnbaum, 12 E. 48 St., New York, Zone 17, 6 story apartment, 180 E. 17 St. $575,000.

▲ N. Y., Newburgh—HOUSING—U. S. Eng., 80 Lafayette St., New York, Zone 13, plans by Erwin Gerber, 1180 Raymond Blvd., Newark, N. J., construct, manage, finance 284 unit housing at Steward Air Force Base. $2,800,000.

N. C., Charlotte—OFFICE—Duplan Corp., Hazelton, Pa., office. Approx. $500,000.

▲ O., Columbus—APARTMENTS—Edward Tonti, 253 S. Southampton Ave., 40 four to eight-family apartments and 225 single homes, West Sullivant Avenue Development. $3,500,000. CD 1/23.

▲ O., Columbus—SHOPPING CENTER, etc.—Westfield Corp., 42 E. Gay St., West Broad Street Shopping Center and Residential development, 40-acre shopping center, 1,000 homes. $25,000,000.

▲ O., Dayton—HOSPITAL—Good Samaritan Hospital, Sister Cyril, supt., 1425 W. Fairview St., plans by Schenck & Williams, Natl. Bank Bldg., hospital addn., 120-bed maternity wing, $1,500,000. CD 11/15.

O., Fremont—HOSPITAL—Memorial Hospital of Sandusky Co., Fremont, plans by C. H. Shively, Fremont, 60-bed hospital addn., $800,000. CD 11/7.

▲ O., Springfield—CHAPEL and LIBRARY—Wittenberg College, N. Wittenberg Ave., plans by T. Norman Mansell, 262 S. 17 St., Phila., Pa., brick, concrete, steel chapel and library. $1,250,000. CD 4/13/50.

▲ Pa., Abington — RESIDENTIAL DEVELOPMENT — Isard-Rizen Co., 16 St. and Godfrey Ave., Phila. residential development, land, shopping center, Old York Rd. Approx. $5,000,000.

▲ Pa., Huntingdon Valley—APARTMENT, etc—Baederwood, Inc., c/o Harold I. Wilson, 34 S. 18 St., Phila., apartment development, residential development and shopping center. Approx. $2,000,000.

▲ Pa., Midland—APARTMENT—Hillcrest Apartments, Inc., R. D. 4, Corapolis, plans by Arthur E. Tennyson, 666 Washington Rd., Pittsburgh, 2 story, bsmnt., 29x108 ft., brick, block 108 suite apartment. $1,100,000. CD 10/25.

▲ Tenn., Memphis—OFFICES, etc.—Orgill Bros. & Co., 36 W. Calhoun Ave., Zone 1, offices, salesrooms warehouse, Lamar St., near Mallory St. $2,000,000.

Tex., Amarillo—DWELLINGS—Bill Schutts, 3320 Georgia St., 60 addnl. frame housing units, adjacent West Haven Rental Proj. $420,000.

▲ Tex., Houston—SANCTUARY, etc.—St. Mary's Seminary, 1018 Preston Ave., plans by Maurice J. Sullivan, 3901 Travis St., sanctuary, $350,000; refectory, dining hall, laundry plant, $325,000; power plant, $75,000; library and administration bldg. (main bldg.), $800,000; dormitory, $450,000 on tract off Memorial Dr.

Tex., Kingsville—HOUSING—National Defense Housing, c/o Wade, Gibson & Martin, archts., 419 Prof. Bldg. Corpus Christi, 70 brick veneer housing units. $550,000.

Tex., Rockdale—OFFICE, etc.—Aluminum Co. of America, Rockdale, plans by Wyatt C. Hedrick, 5201 Fannin St., Houston, 2 story, 18,000 sq. ft., brick, hollow tile and laboratory, concrete frame, pier and beam fdn. near here. $500,000.

▲ Wash., Bremerton—HOUSING—New Housing, Inc., 2017 W. 57 St., Seattle, plans by R. L. Durham & Assocs., 1100 Denny Way, Seattle, 144 duplex housing units in View Ridge Dist. $1,080,000. CD 8/21.

Wis., Menomonie—LIBRARY—Stout Institute, Menomonie, plans by Foeller, Schobe, Berners, Stafford & Jahn, Green Bay, library, on block south of Ninth Ave. between Second and Third Sts. $500,000. CD 9/29/43.

▲ Wis., Milwaukee — SHOPPING CENTER — Froedtert Enterprises, Inc., c/o J. E. Rapping, 735 N. Water St., Zone 2, Southgate Shopping Center addn. $4,000,000.

▲ Wis., Milwaukee—SHOPPING CENTER—Ed. Schuster & Co., Inc., 1208 W. Vliet St., Zone 5, shopping center. $15,000,000.

Wis., Racine — Y.W.C.A. BLDG. — Young Women's Christian Assn., 312 7 St., Y.C.C.A. bldg., $600,000. CD 6/20/46.

▲ Ont., Toronto—OFFICE—Confederation Life Assn., 12 Richmond St. E., plans by Marani & Morris, 1250 Bay St., 10 story, bsmnt. and sub-bsmnt., two 2 story penthouse floors, steel frame, brick concrete office bldg., Jarvis St. at Bloor St., Approx. $3,500,000. Wiggs, Walford, Frost & Lindsay, 91 A Bloor St. W., engrs. CD 8/10.

INDUSTRIAL BUILDINGS

▲ Ark., Gum Springs—ALUMINUM PLANT—Reynolds Metals Co., Aluminum Div., 2537 S. 3 St., Louisville, Ky., aluminum plant. $30,000,000.

Colo., Grand Junction—PLANT—United Fruit Growers Assn., Grand Junction, fruit processing plant, $500,000.

Ind., East Chicago—POWER PLANT—Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O., power plant. $700,000. Ralph Wilps, Greensburg, Pa., consult. engr. CD 11/1.

Minn., Hopkins—WAREHOUSE—Massey-Harris Co., Racine, Wis., 1 story, 65,000 sq. ft. warehouse, St. Louis Ave., East Hopkins. $552,000.

N. M., Farmington—PLANT—Imperial Sulfur & Acid Co., Albuquerque, 60-ton per day sulfur plant recovery unit. $775,000. Graff Engineering & Equip. Co., 3415 Westminster St., Dallas, Tex., consult. engr.

Pa., Indiana—PLANT—The Lucerne Coke Co., Indiana, coal screening plant, steel, concrete at Lucerne Mines, $500,000. Heyl & Patterson, 55 Water St., Pittsburgh, consult. engrs. Fred Sprankle, R & P Bldg., owner's engr.

Pa., McKeesport—PLANT—Firth Sterling Steel & Carbide Corp., McKeesport, chemical processing plant, $500,000. Chemical Plants, Div. Blaw Knox Constr., 950 Duquesne Way, Pittsburgh, engr.

▲ Pa., Sharon—PLANT—Shenango-Agaloy Tube Co., Sharon, mfg. plant. $1,700,000.

▲ Tenn., Memphis—WAREHOUSE—Mid-South Refrigerated Warehouse Co., c/o A. Epstein & Sons, Inc., engr.-archt., 2011 W. Pershing Rd., Chicago, Ill., 1,000,000 cu. ft. on 1st floor, 15,000 sq. ft., 2nd floor, steel, concrete, tile, warehouse bldg. $1,500,000.

▲ Tex., Olton—POWER PLANT—Southwestern Public Service Co., Mercantile Bank Bldg., Dallas, electric power plant. $16,510,642.

▲ Tex., Orange—PLANT—E. I. du Pont de Nemours & Co., Orange, plant expansion to increase production of polythene, $10,000,000; storage for warehousing, $93,000; repair shop unit, $200,000. CD 3/22/51, under LB.

Vt., Windsor—WAREHOUSE, etc.—Goodyear Tire & Rubber Co. of Vermont, Shoe Products Div., Windsor, warehouse and shipping bldg. $750,000.

W. Va., East Steubenville—PLANT—Koppers Co., Koppers Bldg., Pittsburgh, Pa., anti-pollution plant. $500,000.

Alta., Edmonton—PLANT—Standard Iron & Engineering Works Ltd., 107 Ave. at 120 St., 15,000 sq. ft. plant addn. $500,000

▲ Man., St. Boniface—REFINING STATION EXPANSION—North Star Oil Co. Ltd., Scott Block, Winnipeg, refining station expansion and bulk storage plant on 80 acres adjoining present refinery. $1,000,000.

UNCLASSIFIED

▲ Ga., Athens—COLISEUM—Bd. Regents, University System of Georgia, 20 Ivy St., Atlanta, athletic coliseum at University of Georgia. $2,000,000.

Michigan—ELECTRIC DISTRIBUTION—Consumers Power Co., W. R. Carlyon, mgr. Lansing Div., 110 E. Michigan St., Lansing, electric distr. electric substations distr. line to connect with Potterville area, power supply to incl. high voltage transmission line, Charlotte and Dimondale. $725,000.

▲ Mich., Lansing—GAS SYSTEM—Consumers Power Co., W. R. Carlyon, mgr., Lansing Div., 110 E. Michigan St., gas system expansion, incl. 20 mi. gas mains, 3 gas regulator stations, imprvs. to 37 mi. existing gas mains. $1,500,000.

▲ New Mexico—STEAM GENERATING PLANT, etc.—Plains Electric Generation & Transmission Co-operative, Springer, 30,000 kw. steam generating plant, near Escalona, 141 mi. 115 kv transmission line and 3 related sub-stations, Plains Co. $9,045,000.

▲ Texas—COMPRESSOR STATIONS and PIPE LINE—Gulf Refining Co., Gulf Bldg., Houston, crude oil pipe line compressor stations, near Colorado City, $200,000; near Midland, $225,000; 80 mi. 24 in. welded joint crude oil pipe line from vicinity Midland to Colorado City, $5,157,000.

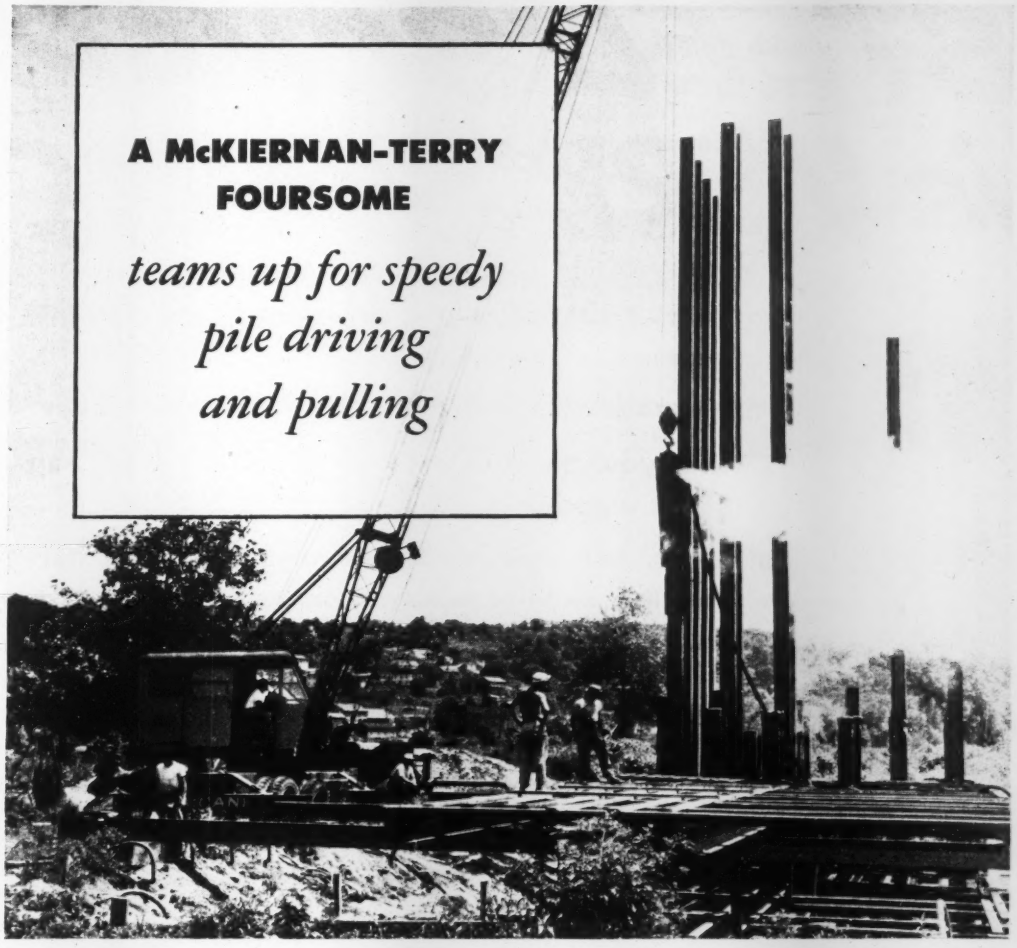
▲ Texas—PIPE LINE—Humble Pipe Line Co., Humble Bldg., Houston, addnl. outlet pipe line in Spraberry areas of Reagan and Upton Counties, $2,173,000. CD 12/24/49.

▲ Texas—OIL LINE—Sun Pipe Line Co., M. Esperson Bldg., Houston, 99 mi. crude oil feeder line from vicinity Snyder to West Texas Gulf Line, southwest, Scurry Co. $1,750,000.

Que., Sherbrooke—LIGHTING SYSTEM—Municipality ratepayers vote approval lighting system extensions. $750,000. J. C. Cote, City Hall, city engr.

A McKIERNAN-TERRY FOURSOME

teams up for speedy pile driving and pulling



A McKiernan-Terry Pile Hammer driving steel foundation piles for the Housatonic River Bridge from the 80-ft boom of a truck crane. Mariani Construction Co. was the contractor.

Here's bridge-building teamwork . . . McKiernan-Terry style! On the new Housatonic Bridge connecting Derby and Shelton, Conn., four pieces of McKiernan-Terry equipment were teamed up by the contractor for fast pile driving and extracting.

McKiernan-Terry 9-B-3 and 10-B-3 Double-Acting Hammers drove 40 to 65 feet steel piles to refusal in rock for four piers and the east abutment. Piles were punched down on a 1 in 6 batter from large crane rigs.

Cofferdam steel piles, 40 feet in length, were driven by a McKiernan-Terry Double-Acting No. 7 Hammer and quickly removed with a McKiernan-Terry E-4 Pile Extractor.

You, too, can get all the pile-driving versatility you need with the wide range McKiernan-Terry line. It includes 16 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors. Write for bulletin.

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MANUFACTURING ENGINEERS
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Plants: Harrison N.J. and Dover N.J.

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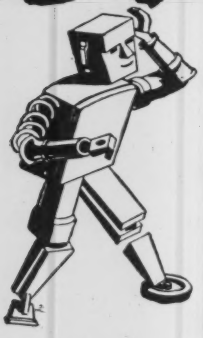

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 3, Connecticut March 18, Massachusetts
STREETS AND ROADS
March 5, Rhode Island
March 18, 25, April 1, Massachusetts

BIDS ASKED—BUILDINGS

▲ **Mass., Lynn**—HOUSING—B.A. 3/5—Lynn Housing Auth., 58 Andrew St., 175 housing units, Proj. 23-2. $1,750,000. Desmond & Lord, 6 Beacon St., Boston, archts. CD 8/27.

BUILDINGS

LOW BIDS AND CONTRACTS

Canter Constr. Co., 185 Corey Rd., Brookline, Mass., CA, $750,000, 1 and 2 story, 60,000 sq. ft. Meat Processing PLANT, BOSTON, MASS. New England Provision Co., S. Hampton and Massachusetts Ave., Boston, Mass. Bids Jan. 29, awarded Feb. 14. CD 1/2.

J. F. Rand & Son, 57 Sudbury St., Boston, Mass. LB $509,940, SCHOOL, Groton Rd., North Chelmsford, CHELMSFORD, MASS. Town, H. M. Jeffords, supt. Schools, Billerica Rd., Chelmsford, Mass. Bids Feb. 14. CD 1/22.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 5, New York

BIDS ASKED—BUILDINGS

Pa., Warren—SCHOOL—B.A. 3/6—School Dist. of Warren, Warren, 2 story, brick, tile Bessie A. Johnson School. $553,500. Plans deposit $30. Lawrie & Green, 321 N. Front St., Harrisburg, archts. CD 10/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW YORK**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, **Construction Aggregates, Inc.**, 1 E. 42 St., New York 17, N. Y. LB $5,646,063, piers for westerly half of Tarrytown-Nyack Bridge, Rockland Co. CD 1/30.

† **Fleisher Eng. & Constr. Co.**, 936 Ellicott Square Bldg., Buffalo 3, N. Y. CA. $790,268, airmen's dormitories at Niagara Falls Air Force Base, NIAGARA FALLS, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Jan. 10. CD 12/12.

▲ **A. Friederick & Sons Co.**, 710 Lake Ave. Rochester, N. Y., LB $1,180,000. water treatment works, ROCHESTER, N. Y. City, City Hall, 20 S. Fitzhugh St., Rochester 14, N. Y. Kenneth Knapp, city engr. Bids Feb. 7. CD 1/3.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 12, Louisiana

▲ **Ky., Covington**—B.A. 3/25—Northern Kentucky Sanitation Dist. 1, sanitary sewage treatment facilities, primary treatment plant utilizing sludge burning equip., approx. 20 mi. 12- to 60-in. collectors, 3 pump stations with submerged river crossings, appurtenances, $6,500,000. Vogt, Ivers, Seaman & Assoc., 509 Second National Bldg., Cincinnati 2, O., engrs. CD 10/31/49.

SOON LETS CONTRACT—BUILDINGS

Tenn., Memphis—CLINIC, etc.—Southern College of Optometry, 1240 Union Ave., soon lets contract 2 story optometry college bldg., and 10,000 sq. ft. clinic college, stone, brick constr. $600,000. Daniel T. McGown, 1800 Union Ave., archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Joe Reinertson, 2027 N.W. 7 Av., Miami, Fla., CA $639,174, sewerage sys. and disposal plant, MADEIRA BEACH, FLA. City, Madeira Beach, Fla. Bids Jan. 21. CD 2/6, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **H. L. Coble Constr. Co.**, P. O. Box 2040, Greensboro, N. C., LB $1,448,000. HOUSING Proj. NC 13-1, DURHAM, N. C. Durham Housing Auth., 206½ Corcoran St., Durham, N. C. Bids Feb. 14, CD 1/23.

▲ **Algernon Blair**, First National Bank Bldg., Montgomery, Ala., CA, $1,500,000, 200 HOUSING units, AUGUSTA, GA. Mansion Homes, c/o contractor.

James L. Bracewell Co., Toccoa, Ga., CA, $529,152. 70 HOUSING units, BUFORD, GA. Buford Housing Auth., Buford, Ga. Bids Feb. 14. CD 1/22.

▲ **A. B. Newton & Co.**, Vidalia, Ga., LB, $1,647,000 HOUSING, Projects GA 100-3 and GA 100-4, VALDOSTA, GA. Valdosta Housing Auth., Valdosta, Ga. Bids Feb. 12. CD 1/22.

▲ **Daytona Inlet Development Co.**, Ocean Dr., Daytona Beach, Fla., Owner Builds. Approx. $2,000,000, 295 RESIDENCES, DAYTONA BEACH, FLA.

▲ **The Mackle Co.**, 2818 S.W. 22 St., Miami, Fla., Owner Builds, $2,000,000, 482 RESIDENCES, S.W. 40 Terrace and 99 Ave., MIAMI, FLA. (Correction—cost)) CD 2/13, under CA.

▲ **Dye & Mullings, Inc.**, P.O. Box 485, Columbia, Miss., LB $1,064,868, HOSPITAL, HOUMA, LA. Terrebone Parish Police Jury, Houma, La., Bids Feb. 14. CD 1/13.

▲ **R. P. Farnsworth & Co.**, 1515 S. Salcedo St., New Orleans, La., CA, $6,182,000, HOUSING, Project LA 1-12, NEW ORLEANS, LA. New Orleans Housing Auth., 1111 Tulane Ave., New Orleans, La. Bids Jan. 31. CD 2/7, under LB.

▲ **Southern Builders**, Box 1815 Shreveport, La. CA. $1,086,000 Nursing SCHOOL at Confederate Memorial Medical Center, SHREVEPORT, LA. State Div. Admin., Capitol Annex, Baton Rouge, La. Bids Jan. 29, awarded Feb. 15. CD 2/7, under LB.

F & M Builders, Walnut Manor, Memphis, Tenn., Owner Builds Approx. $880,000. RESIDENCES, MEMPHIS, TENN.

Mack Lewis, 464 N. Main St., Memphis, Tenn., Owner builds. $500,000. 2 story, brick, steel, pre-cast concrete beams, 40-OFFICE, air-conditioning, Broad and Hollywood Sts., MEMPHIS, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 11, Wisconsin
STREETS AND ROADS
March 11, Wisconsin

BIDS ASKED—BUILDINGS

Ind., Kokomo—SCHOOL—B.A. 3/13—School City of Kokomo, 1 story, brick, stone, school and gymnasium, $650,000. Extended date. Beine, Hall & Curran, 607 Broadway, Gary, assoc. archts., and Perkins & Will, 309 Jackson Blvd., Chicago, 6, Ill., archts. CD 2/4.

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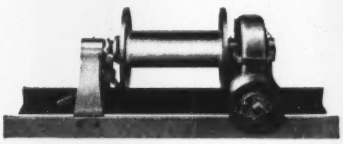

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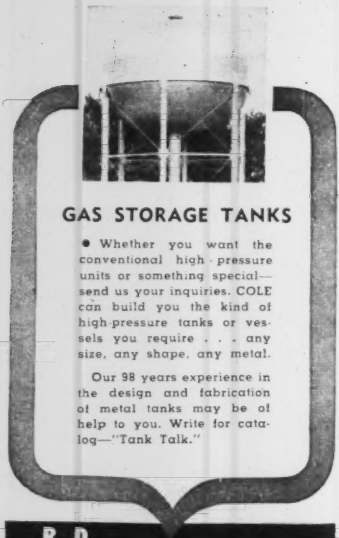

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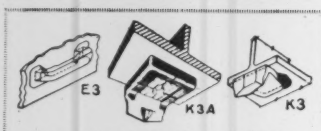

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SOON LETS CONTRACT—BUILDINGS

Ill., Chicago—HOME—Daughters of Zion, c/o Loewenberg & Loewenberg, archts., 111 W. Monroe St., Zone 3, soon lets contract 4 story Old Peoples Home modification. Hirsch and California Sts. $600,000. CD 9/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Maxon Constr. Co., 131 N. Ludlow St., Dayton, O., LB $520,000, est. $750,000, 16 mg. underground water reservoir, booster station on north side of Germantown Pike between Burwood and Mt. Clair St. DAYTON, O. City, City Hall, Dayton, O. Bids Feb. 4. Lloyd Huffman, city water dir. CD 5/27/49.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Paul E. Schleicher & Sons, 545 Broadway, Gary, Ind., LB, $2309,349, 272 unit Dorie Miller HOUSING, paving, water lines, electric lines, GARY, IND., Gary Housing Auth., 400 Progress St., Gary, Ind., Bids Feb. 11, CD 1/25.

F. H. McGraw & Co., 51 E. 42 St., New York, 17, N. Y., CA, installing equipment at Railroad Car EQUIPMENT PLANT, HAMMOND, IND. Standard Railway Equipment Co., 4527 Columbia Ave., Hammond, Ind.

W. E. O'Neil Constr. Co., 2751 Clybourn Ave., Chicago, Ill., CA; $500,000, Prospect Dial Telephone EXCHANGE, 6250 S. Claremont St., CHICAGO, ILL. Illinois Bell Telephone Co., 212 W. Washington St., Chicago 6, Ill., Bids Jan. 17, awarded Feb. 5. CD 12/28.

Brown Investment Co., 18545 E. Warren St., Detroit, Mich., Owner Builds, $800,000, 50 single HOMES, Ridge Top Development, Kerby and Ridge Rds., GROSSE POINT FARMS, MICH.

▲ Rossin & Ringler, 18685 Wyoming St., Detroit, Mich., Owner Builds, $4,500,000, 450 brick HOUSES, Mack and Englehart Sts., ST. CLAIR SHORES, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 7, Minnesota
STREETS AND ROADS
March 7, Minnesota

† Nebraska—B.A. On Or About 3/3—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., emergency repairs to levees in the Republican River basin from Alma, Neb., to Junction City, Kan. CD 6/17/43.

† S. D., Rapid City—DOCK REFUELING etc.—B.A. 3/7—U. S. Eng., 1709 Jackson St. Omaha, Neb., dock refueling and fuel oil storage at Rapid City Air Force Base, Inv. 52-62. Bids Nov. 27 rejected. LB $644,789. CD 12/3, under LB.

† Tex., Waco—WAREHOUSE—B.A. 3/2—U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, base warehouse at Connally Air Force Base, ENG 41-443-52-22. Harry L. Spicer & J. W. Bush, Amicable Bldg., archts. CD 1/19.

† Texas—B.A. 3/11—U. S. Eng., 606 Santa Fe Bldg., Galveston, repairs to guide walls of Brazos River floodgates, Gulf Intracoastal Waterway, near Galveston, Inv. No. CIVENG 41-243-52-54. Approx. $75,000. CD 4/21/44.

† Colo., Denver—FACILITIES—B.A. 3/14—U. S. Eng., 1709 Jackson St., Omaha, Neb., navigation aid facilities at Lowry Air Field Base, Inv. 52-41. CD 8/28.

BIDS ASKED—BUILDINGS

† Okla., McAlester—EXPLOSIVE MAGAZINES—B.A. 3/6—U. S. Govt., Dept. Navy, c/o Officer in Charge of Construction, Eighth Naval Dist., Bldg. 16, Naval Station, New Orleans, La., explosive magazines, Naval Ammunition Depot, NOY 70830. Approx. $500,000. CD 12/14.

Tex., Dallas—SCHOOL—B.A. 3/10—Dallas Independent School Dist., 3700 Ross St., construct Casa Via Heights School, $520,000. Plans deposit $25. Mark Lemmon, 1210½ Main St., archt. CD 12/19.

Minn., Edina (Minneapolis P. O.)—SCHOOL—B.A. 3/12—Bd. Educ. School Dist. 17, Mrs. J. F. Richards, clk., 122x152 ft. physical education addn. to high school, 5701 Normandale Rd., Minneapolis, Zone 10, $500,000. Plans deposit $25. Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, archts.

▲ Ark., El Dorado—REFINERY UNIT, etc.—Bids Asked—Lyon OIL Co., El Dorado, catalytic refinery unit, $2,000,000; alkylation plant, $1,475,000; 2 steam generators unit, $750,000; 16,000 gal. tower for refinery units, $275,000, tankage and storage, $300,000. CD 2/8.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

Nebraska—RURAL DISTRIBUTION LINES—Loup River Public Power Dist., Columbus, soon lets contract 37 mi. rural distr. lines from Norfolk to Belden, $100,000. P. E. Hampton, c/o owner, ch. engr. CD 7/11.

SOON LETS CONTRACT—BUILDINGS

▲ Tex., Houston—LABORATORY—Humble Oil & Refining Co., Humble Bldg., soon lets contract 2 story research laboratory (includes 112,000 sq. ft. main bldg., and 30,000 sq. ft. warehouse). $2,500,000. Mackie & Kamrath, 2713 Ferndale St., archts. Howard & Johnson, Scanlan Bldg., and Walter P. Moore, 4605 Montrose St., engrs. CD 1/31.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Geo. Bennett Constr. Co., 1520 Central Ave., Kansas City, Kan., LB $1,435,493, est. $1,815,063, concrete runways, taxiways and aprons;

Reno Constr Co., Overland Park, Kan., LB $1,179,922, est. $1,583,784, asphalt runways, taxiways and aprons, Grandview Air Force Base, Eng. 23-028-52-24, GRANDVIEW, MO. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Feb. 14. CD 1/25.

▲† Al. Johnson, Inc., 315 14 Ave. S.E., Minneapolis, Minn.; Western Contg. Co., 400 Benson Bldg., Sioux City, Ia.; Condon-Cunningham Co., 4229 Lafayette St., Omaha, Neb., and Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB, $8,364,-141 spillway, Stage II and completion outlet works at Fort Randall Dam and Reservoir Project, Inv. 52-59, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 15. CD 12/26.

† Condon-Cunningham Co., 4229 Lafayette St., Omaha, Neb., LB, $928,515, flood protection structures, Argentine Unit, Part 1, Sect. 1, near Kansas City, Kan., Inv. 52-142, Wyandotte Co., KANSAS. U. S. Eng., Davidson Bldg., Kansas City, Mo. Bids Feb. 12. CD 2/5.

▲† Martin K. Eby Constr. Co., Inc., 610 N. Main St., Wichita, Kan., LB $4,936,687, est. $5,700,000, 21 concrete buildings;

J. D. Leftwich Constr. Co., 8811 E. Susan Ave., Albuquerque, N. M., LB $4,430,845, est. $5,144,352, 21 wood frame buildings, Forbes Air Force Base, Eng. 23-028-52-34, TOPEKA, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo. Bids Feb. 15. CD 1/15.

† R. B. Stovall Constr. Co., Box 7143, Dallas, Tex., LB $795,784, new North-South Runway and Taxiway, Lot No. 4, Inv. No. Eng 34-066-52-28, Perrin Air Force Base, SHERMAN, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Feb. 12.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Sauers Constr. Co., 1255 Larpenteur Ave. W., St. Paul, Minn., LB $1,986,000, general constr., Junior-Senior High SCHOOL, Hy. 36, near Lexington Ave., LAUDERDALE (ST. PAUL P. O.), Minn. Bd. Educ., Independent School Dist. 3, Ramsey Co., T. C. Schultz, Jr., Lauderdale, Minn. Bids Feb. 14. CD 12/31.

▲ Milton Constr. & Supply Co., 7567 St. Charles Rock Rd., St. Louis 14, Mo., Owner Builds, $1,297,000, seventy-eight 25x48 ft., 5-room brick BUNGALOWS and GARAGES; forty-seven 25x53 ft., 6-room frame BUNGALOWS, Hathaway Hills No. 4 subdivision, JENNINGS (ST. LOUIS 21, P. O.), MO.

Texarkana Constr. Co., P. & M. Bldg., Texarkana, Ark., LB, $435,600, HOUSING, Project Ark 16-2, CAMDEN, Ark. Camden Housing Auth., Camden Ark. Bids Feb. 12. CD 1/23.

▲ Lone Star Steel Co., Daingerfield, Tex., Owner Builds, under supervision of The Selas Corp. of America, engrs., Erie Ave., west of "D" St., Phila. Pa., Approx. $2,250,000 PLANT unit for high-speed heat processing line for normalizing welded steel pipe, DAINGERFIELD, TEX. CD 9/19.

▲ Ebasco Service, Inc., Beaumont Rd., Houston, Tex., CA Approx. $18,000,000, design and construct ELECTRIC GENERATING PLANT, incl. two 100,000-kw generator units, on 500-acre site, half way between Houston and Galveston on Galveston Rd., at LEAGUE CITY, TEX. Houston Lighting & Power Co., 1016 Walker St., Houston, Tex. CD 2/19.

▲ Southwest Ball Constr. Co., 228 E. Martin St., San Antonio, Tex., CA, $1,170,777, Tex. 6-213, 154 unit low-cost rental HOUSING, SAN ANTONIO, TEX. San Antonio Housing Auth., 400 Labor St., San Antonio, Tex. Bids Jan. 29. CD 2/1, under LB.

† Riedesel-Lowe, Box 914, Cheyenne, Wyo., LB, $575,-487, general, SHOP and WAREHOUSE bids, Rocky Flats Proj., Inv. NO. 292-52-29, BOULDER, COLO., U. S. Atomic Energy Comm., Contg. Officer, Box 5400, Albuquerque, N. M. Bids Feb. 11. CD 1/28.

A. A. & E. B. Jones, 682 Wyandot St., Denver, Colo., CA, $801,236, general contract 2 story, rein.-con. frame, brick Harry V. Kepner Junior High SCHOOL, W. Kentucky St. and S. Hazel Court, DENVER, COLO. School Dist. 1, 414 14 St., Denver, Colo. Bids Jan. 30, awarded Feb. 13. CD 2/8, under LB.

Lembke, Clough & King, Box 245, Albuquerque, N. M., LB $492,876, Sandia Base Elementary SCHOOL, ALBUQUERQUE, N. M. Housing & Home Finance Agency, State Capitol Bldg., Santa Fe, N. M. Bids Feb. 6. CD 1/23.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
March 12, 13, California
STREETS AND ROADS
March 12, California

† WASHINGTON—B.A. 3/20—U. S. Eng., City-County Airport, Walla Walla.

Franklin Co.—raising, alter. Union Pacific Railroad Bridge over Columbia River, near Pasco, CIVENG 45-165-52-74.

raising, altering Northern Pacific Ry. Bridge over Snake River near Pasco, CIVENG 45-164-52-74.

▲ Washington—B.A. 3/27—Pend Oreille Co. Public Utility Dist., Newport, construction of Box Canyon

hydro dam, $16,000,000. Harza Eng. Co., 400 W. Madison Ave., Chicago, Ill., engr. CD 2/13/51.

BIDS ASKED—BUILDINGS

Nev., Las Vegas—HIGH SCHOOL—B.A. 3/12—Las Vegas Union School Dist., 401 S. 9 St., auditorium at Las Vegas High School, $874,000. Plans deposit $50. Claude Beelman & Herman Spackler, 7421 Beverly Blvd., Los Angeles, Calif., archts. CD 8/6/45.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† A. Teichert & Son, Inc., 751 S. Figueroa St., Los Angeles, Calif., CA, $1,079,071, imprv. Los Angeles River, Van Nuys Ave. to Sepulveda Dam, etc., CIVENG 04-353-52-17, CALIFORNIA U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 5, awarded Feb. 14. CD 2/12, under LB.

▲ CALIFORNIA State Div. Hys., 120 S. Spring St., Los Angeles.

Bongiovanni Constr. Co., 2457 Canyon Dr., Los Angeles, Calif., CA, $2,274,366, 3 bridges, undercrossing and other work on Hollywood Freeway between Mulholland Dr. and Cahuenga Blvd.; and between Gower and Hollywood, Los Angeles, Los Angeles Co. Bids Jan. 31, awarded Feb. 14. CD 2/7, under LB.

▲ **R. V. Lloyd & Co.**, Coachella, Calif., CA, $1,598,798 earthwork, pipe lines, structures, for laterals 97, 98, 99.4 and 99.8-0.51 and sublaterals Part 2 of Unit 9 Coachella Valley Distribution system, All-American Canal System, Spec. DC 3632, CALIFORNIA, Bureau Reclamation, Dpt. Interior, Coachella, Calif. Bids Feb. 7, awarded Feb. 14. CD 2/14, under LB.

▲† **Ford J. Twaits Co.**, 449 S. Beaudry Ave., Los Angeles, Calif., CA, $1,108,969, addnl. WAREHOUSE sections, Job Number Norton Air Force Base, Eng. 04-353-52-31, SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Feb. 8, awarded Feb. 11.

BUILDINGS

LOW BIDS AND CONTRACTS

Triangle Bldg. Co., Idaho Falls, Iadho, LB, $616,313 High SCHOOL, TWIN FALLS, IDAHO. Twin Falls School Dist., Twin Falls, Idaho. CD 12/27, under LB.

Larsen Constr. Co., 2667 Lincoln St., Ogden, Utah, LB $336,785, construct Club Heights Elementary SCHOOL, OGDEN, UTAH, Bd. Educ., Ogden, Utah. Bids Feb. 7. CD 1/30.

▲† **Zoss Constr. Co.**, Pittock Block, Portland, Ore., CA, $3,793,188, 5 government-design WAREHOUSES at Auburn General Depot, AUBURN, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Jan. 24, awarded Feb. 15. CD 1/16.

† **John H. Sellen Constr. Co.**, 228 9 Ave., Seattle, Wash., CA, $789,179, Tire Storage WAREHOUSE at Mount Rainier Ordnance Depot, Inv. 52-102, TACOMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Jan. 16. CD 1/23, under LB.

Harry K. Jensen, 1025 44 St., Oakland, Calif., CA $664,000, Christensen Lane SCHOOL, CASTRO VALLEY, CALIF. Castro Valley Elementary School Dist., Castro Valley, Calif. Bids Jan. 22, awarded Feb. 13, CD 1/30, under LB.

E. F. Wopschall, 35 N. Arroyo Parkway, Pasadena, Calif., LB, $523,709, 1 story, frame, stucco Rio Hondo SCHOOL, EL MONTE, CALIF. El Monte School Dist., 200 S. Lexington St., El Monte, Calif. Bids Feb. 8. CD 6/22.

Swinerton & Walberg, 225 Bush St., San Francisco, Calif., CA, $511,000, NON-PROCESS BLDGS., NIMBUS, CALIF. Aerojet Corp., Administration Bldg., Nimbus, Calif. Awarded Feb. 14. CD 12/31, under LB.

Rothschild, Raffin & Weirick, 274 Brannan St., San Francisco, Calif., LB, $631,300, general contract Lakeside Elementary SCHOOL, SAN FRANCISCO, CALIF. Dpt. P. Wks., City Hall, San Francisco, Calif. Bids Feb. 13, CD 1/28.

Glen C. Bailey, 2055 S. Main St., Santa Ana, Calif. Owner Builds, $960,000, 120 DWELLINGS, Standard and Delhi Aves., SANTA ANA, CALIF.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Camp Borden—MESS—B.A. 3/4—Defence Construction (1951) Ltd., 441 Queen's Quay W., Toronto, large mess at air force camp (File 122-7-C4-7, Job 1796). $100,000. Plans deposit $100. R. P. Opie, c/o owner, engr.

Ont., Clinton—MESS—B.A. 3/4—Defence Construction Ltd., 441 Queen's Quay W., Toronto, large mess at air force base, (File 122-7-C2-10, Job 1795). $100,000. Plans deposit $100. R. P. Opie, c/o owner, regional engr.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

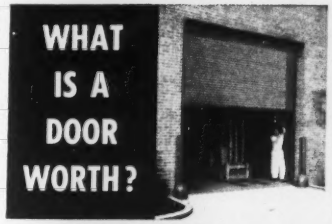
ALBERTA—Govt. of Canada (Dpt. Mines & Resources) Hunter Bldg., Ottawa, Ont., Day Labor. $100,000, reconstructing 17 mi. road from Jasper West to B. C. Boundary, Jasper. CD 12/3/43.

BUILDINGS

LOW BIDS AND CONTRACTS

Vancouver Associated Contractors Ltd., 815 W. Hastings St., Vancouver, B. C., CA, $456,400, 62 HOUSES in Fraser View Housing Development, VANCOUVER, B. C. Central Mortgage & Housing Corp., 360 Homer St., Vancouver, B. C. Bids Feb. 12, awarded Feb. 14. CD 1/30.

▲ **Adelard Jacques**, 159 Short St., Sherbrooke, Que., CA, Approx. $1,250,000, HOSPITAL annex. 204 Belvedere St. S., SHERBROOKE, Que. Hospice du Sacre Coeur, 204 Belvedere St. S., Sherbrooke, Que. Bids Feb. 5. CD 2/1.



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HERE'S WHY — Long life and low upkeep *save money.* Many of these doors have been in daily use 40 years or more. Efficient action *saves money.* Interlocking steel-slat curtain coils upward easily, clears doorway fully. Extra protection *saves money.* Kinnear Rolling Doors guard against fire, theft, weather. More usable space *saves money.* All-around floor, wall, ceiling areas can be used. *Write today.*

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KINNEAR
ROLLING DOORS

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: March 5, 1952

Soil Explorations

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Eastern Standard Time, on March 5, 1952 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, MOHAWK SECTION, SUBDIVISION NO. 2, WESTERN AVENUE TO ROUTE 146, CITY OF ALBANY, TOWNSHIP OF GUILDERLAND, ALBANY AND SCHENECTADY COUNTIES, AND SCHENECTADY THRUWAY SPUR, ALTAMONT AVE., TO ROUTE 146 TOWNSHIP OF ROTTERDAM, CITY OF SCHENECTADY, SCHENECTADY COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-28.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, 1, N. Y.

(b) G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, N. Y.

(c) Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $23,015.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1151.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: March 11, 1952

Route 43, Sections 14A & 13D

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

For widening and Resurfacing Route 43, Sections 14A & 13D, from Shore Road to Bremen Avenue, City of Absecon and Galloway Township, Atlantic County. Length 9.301 miles. The principal items of construction are:

Estimated:
- 31,850 cu. yds. Roadway Excavation-Earth
- 20,700 cu. yds. Subbase
- 11,950 sq. yds. Gravel Shoulder
- 20,350 tons Bituminous Concrete Surface Courses
- 47,523 sq. yds. Penetration Macadam-Intermediate Course

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, March 11, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

(Continued on page 72)

READ THE OFFICIAL
PROPOSAL COLUMNS OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS
(Continued from page 71)

Bids: March 11, 1952

Rt. 6, Sec. 1, Widening of Bridges

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Widening of bridges over Overpeck Creek, Erie Railroad (Northern Branch) and Grand Avenue on Route 6, Section 1, Boroughs of Ridgefield, Ridgefield Park, and Palisades Park, Bergen County. The principal items of construction are:

Estimated:
- 8,730 lin. ft. Steel H Piles
- 14,170 lin. ft. Timber Piles
- 340 cu. yds. Seal Concrete
- 3,540 cu. yds. Concrete in Structures
- 400,000 lbs. Reinforcing Steel in Structures
- 1,270,000 lbs. Structural Steel
- 3,835 cu. yds. Wet Excavation (Roadway)
- 40,000 cu. yds. Borrow Excavation

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, March 11, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: March 20, 1952

Sewage Treatment Plant

Sealed Bids are Invited by the Mayor and Town Council of the Town of Fairfax, Virgina, to be received, opened, and read in public at the Office of Massey Engineers, Consultants, Ford Building, Fairfax, Virginia at 2:00 o'clock P.M., E.S.T., Thursday, MARCH 20, 1952, for the construction of approximately 27,000 lineal feet of 8" to 18" sanitary sewers and appurtenant structures, and also a 0.50 MGD Single Stage Bio-Filtration Sewage Treatment Plant.

The sewers and Plant may be Bid separately. Authority has been given the Town by N. P. A. to commence construction, and has allotted all of the control materials necessary for the complete Plant construction for the 1st, 2nd, and 3rd Quarters of 1952.

The bidder shall attach to his bid a BID-BOND or certified check made payable to the Treasurer of the Town of Fairfax, Virginia of at least 5% of the total amount of his bid.

Each bidder shall hold a current, valid certificate of registration as a contractor who can operate in the Commonwealth of Virginia. No bid will be accepted unless this registration number is shown in the proper place on the Proposal Form.

On award of contract, the bidder will be required to furnish a performance bond and a maintenance bond both in 100% of the total contract price, also he shall show by certificates that he carries adequate Public Liability, and Property Damage, and Workmen's Compensation Insurance.

The Town of Fairfax, Virginia reserves the right to reject any and all bids and to waive any informality regarding the opening of bids, rejecting of bids, or to whom the contract is awarded.

No Bid may be withdrawn for 30 days after the actual opening thereof.

Plans, Specifications, and Contract Documents may be obtained from Massey Engineers, Ford Building, Fairfax, Virginia upon payment of $15.00 in cash for each set, which sum will be refunded upon the return of such documents in good condition within 10 days after the Bid date.

MASSEY ENGINEERS
CONSULTANTS

Bids: March 12, 1952

Bus Shelters

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-120.001

Sealed proposals for construction of three bus shelters at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:30 A.M., Wednesday, Mar. 12, 1952 at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, February 28, 1952.

Bids: March 10, 1952

Lettering For Popper's Delicacies

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
CONTRACT BT-110.049

Sealed proposals for the furnishing and installation of aluminum lettering for Popper's Delicacies at the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:30 A.M. Monday, Mar. 10, 1952, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer of the Authority and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, February 28, 1952

Bids: March 11, 1952

Route 1, Sec. 1C & Route 25, Sec. 3G

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

Revisions at Tonnele Avenue Traffic Circle and vicinity on Route 1, Section 1C & Route 25, Section 3G, City of Jersey City, Hudson County. The principal items of construction are:

Estimated:
- 1,854 cu. yds. Roadway Excavation-Earth
- 560 cu. yds. Subbase
- 2,557 sq. yds. 10" Reinforced Concrete Pavement
- 3,326 sq. yds. Concrete Sidewalk
- 230 lin. ft. Culvert Pipes
- 14 Inlets & Manholes
- 3,893 lin. ft. White Concrete Curbs
- Highway Lighting, Electrical Signs & Traffic Signals Installations

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, March 11, 1952, at eleven o'clock (11:00 A.M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3666) will be received by Bureau of Reclamation, Goleta, California, until March 25, 1952, and then publicly opened for furnishing labor and materials and performing all work for the construction of concrete pipe lines and structures for the South Coast Conduit, Carpinteria Section, station 0+18 to station 909+09, Cachuma Project, California. The work is situated in the vicinity of Santa Barbara, California. Principal items are approximately: 116,000 cu. yds. excavation; 600 cu. yds. concrete in structures; 76,700 lin. ft. special concrete conduit pipe 27, 30, and 36 inches in diameter; 133,000 lbs. steel pipe and miscellaneous metalwork; miscellaneous equipment, including valves, meters, and electrical installation; and other work. Time allowed for completion will be 450 days. For particulars, address Bureau of Reclamation, Goleta, California; or Building 53, Denver Federal Center, Denver, Colorado.

(Continued on page 74)

OFFICIAL PROPOSAL

RATE: $1.25 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
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$1.50 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
POSITION WANTED & INDIVIDUAL SELLING OPPORTUNITY undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.25 a line an insertion.

INFORMATION.
BOX NUMBERS count as 1 line additional in undisplayed ads.
DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED—RATE PER INCH:
The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS Address New York Office, 330 W. 42nd St., N. Y. 36, for March 13th issue closing March 3rd.

WANTED

1—Superintendent
&
1—Asphalt Plant Foreman

Permanent positions in the South on work now in progress—excellent opportunity.
Reliable Mid-Western Contractor—36 years in road building.

Inquiries treated strictly confidential.

P-3115, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALARIED POSITIONS $3,500—$35,000
We offer the original personal employment service (established 42 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ASSISTANT CONTROLLER for permanent position with general construction company. Experience in systems, internal audit, property accounting, budget and cost-plus accounting is essential. Beginning salary $8,000 to $9,000. Forward resume of experience, education and personal qualifications. P-3456, Engineering News-Record.

CHIEF ACCOUNTANT needed by well-established contractor. Initial assignment on large CPFF contracts. Excellent opportunities for advancement in growing company. Starting salary range $6,000 to $7,000. Submit summary of education, experience and personal data. P-3460, Engineering News-Record.

CIVIL ENGINEER qualified to carry on technical promotion for well established trade association in the construction field. Location—Minnesota. Give personal data, experience and salary requirements. P-3471, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT. Buffalo Area, experienced in large construction projects. Send complete references and salary desired. P-3403, Engineering News-Record.

EXPERIENCED ESTIMATOR and Superintendent for "Gunite" Restoring and High Pressure Grouting. P-3326, Engineering News-Record.

FIELD SUPERINTENDENT—Piping. Well established Northwestern Ohio Plumbing, Heating and Piping Contractor has opening for experienced man as assistant to general field superintendent. Good future assured. Reply giving background, experience and salary expected. P-3476, Engineering News-Record.

SUPERINTENDENT—ASPHALT Plant in New Jersey, must be experienced in operation and maintenance of plant and road equipment, materials and production. Write full qualifications, references and salary. P-3349, Engineering News-Record.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of Instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-first year. Write today.*
WILSON *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

ENGINEERS

Major Petroleum Refinery Construction Company located in New York City desires to add to its expanding staff. If you can qualify for one of the jobs listed below and are interested in a challenging opportunity please submit your resume in detail and past earnings record to the box number below. Our employees know of this ad.

SCHEDULING ENGINEER experienced in job scheduling preferably on petroleum or chemical plants starting with the engineering and proceeding through procurement and construction.

CONSTRUCTION SUPERINTENDENT must have experience in construction of oil refineries and the exercise of executive authority at job site. Must be able to travel.

ASSISTANT TO CONSTRUCTION AND PROCUREMENT SUPERVISOR requires supervisory field erection experience on oil refineries and chemical plants as well as some experience in procurement, expediting and inspection of refinery equipment. Headquarters in New York City with some travel required.

P-3463, Engineering News-Record
330 W. 42 Street, New York 36, N. Y.

POSITIONS VACANT

HIGHWAY ENGINEERS—Men having following qualifications: experience in street, road, culvert and bridge layout and design; preparation of highway paving plans, final estimates, development design and layout. Good pay for qualified men with training and experience. Opportunity for advancement. Furnish full information regarding education, training and experience, age, references and salary required. Replies strictly confidential. Department of Public Works, Baltimore County, Towson 4, Maryland.

STORM DRAINAGE Engineers — Men having experience in design and preparation of drawings for Storm Drainage Systems including inlets, collection systems, intereceptors and culverts. Good pay for qualified men with training and experience. Opportunity for advancement. Furnish full information regarding education, training and experience, age, references and salary required. Replies strictly confidential. Department of Public Works, Baltimore County, Towson 4, Maryland.

STRUCTURAL ENGINEER: Experienced in steel design industrial and commercial buildings by a leading Middle-West structural steel fabricating company. Excellent opportunity for qualified man. Permanent position, hospitalization, group insurance and pension plans. P-3473, Engineering News-Record.

WANTED: CIVIL Engineer with Land Survey experience and business ability to manage established Engineering and Surveying business. Salary determined by ability. Write G.F.D., P.O. box 591, Palmer, Massachusetts.

WANTED—GRADUATE Civil or Structural engineer as field representative, Ohio, by long established engineering, promotional and educational organization. Give resume of education, engineering experience and salary requirements. Prefer age 25-45. P-3450, Engineering News-Record.

ENGINEERS & FOREMEN

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General Superintendent
GEO. E. DEATHERAGE & SON, INC.
5 E. PRESTON STREET
BALTIMORE MARYLAND

POSITIONS VACANT

WANTED IMMEDIATELY Superintendent thoroughly experienced to supervise on large canal and levee project in Southeast. Must be good organizer, producer, know men and equipment. Write stating qualifications. P-2925, Engineering News-Record.

WANTED: TOP Notch Superintendent for roads, grading, utilities. Familiar with maintenance of equipment. New Jersey area. Salary commensurate with ability. P-3263, Engineering News-Record.

COMPUTER-DRAFTSMAN: Wanted by New York City surveyor, state full experience and salary required. P-3481, Engineering News-Record.

JOB ENGINEER, experienced in industrial or central station Power Plant construction. Location Pacific Northwest, with nationally known Engineering and Construction Company. State qualifications, availability and salary desired. P-3479, Engineering News-Record.

EMPLOYMENT SERVICE

ENGINEERS NEEDED in all fields at all levels. Salaries commensurate with experience & ability. Highly confidential service. Bring or mail 3 resumes to: Position Securing Bureau Inc. (Agency), 45 John St., N. Y. 38, N. Y.

POSITIONS WANTED

AMERICAN EDUCATED South American; C.E. Grad., 6 yrs. of Field and Office Construction exp., desires work here or abroad. PW-3447, Engineering News-Record.

CABLE SPLICER (wire rope), 22 yrs. exp. My shop or your job. Own tools and transportation. McGlone, Churchville, N. Y.

CHIEF DRAFTSMAN—29, married, 9 years exp. civil and marine, prefer SW U.S. Excellent references. PW-3407, Engineering News-Record.

(Continued on page 75)

ENGINEERS
DESIGNERS & DRAFTMEN

Electrical, Mechanical
Structural & Hydraulic

Reinforced Concrete
Designers & Detailers

FOR WORK ON

Industrial Plants
Paper & Textile Mills
Water Supply & Waste Disposal
Steam & Hydroelectric Power Plants
Electrical Transmission & Distribution

CHAS. T. MAIN, Inc.

80 Federal Street — Boston 10, Mass.
317 South Tryon St. — Charlotte, N. C.

DESIGNERS

Our Liberal *Profit-Sharing Bonus* in 1951 amounted to more than a half million dollars.

We need the following type of men experienced in any phase of Blast Furnace, Steel Mill and Oil Refinery Design:

Structural Designers
Concrete Designers
Electrical Designers
Piping Designers
Checkers

Positions available in our offices at Cleveland, Ohio, Union, New Jersey and Tulsa, Oklahoma.

WRITE

ARTHUR G. McKEE & CO.
2300 Chester Ave., Cleveland 1, Ohio

ENGINEERS

for design and construction of several major municipal projects. Starting Salaries: $3707, $4515, $5334, $6143, $7036 per year. Write

DETROIT CIVIL SERVICE COMMISSION
735 Randolph St. — Detroit 26, Mich.

Permanent Positions Open to
ENGINEERS
. . . after training at full-time pay . . . as
Consultants in
Fire Protection Engineering
to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.

Write complete qualifications to:
P-2807, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED
CHIEF DRAFTSMAN
Capable of supervising 75 men under general supervision of Chief Engineer. Man should be about 45 years of age and should have wide experience in design of heavy industrial mechanical equipment, piping and heavy foundations. Salary commensurate with ability.

P-3432, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Illinois

WANTED
ASPHALT PLANT SUPERINTENDENT
Experienced bituminous concrete plant Superintendent to handle immediate operation; position permanent for Northern New Jersey corporation; Reply in writing, stating age, education, experience, availability, salary expected; also photograph and references.

P-3454, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: March 6, 1952

Improvements to Various Utilities

Sealed proposals will be received at the office of the Borough Secretary by the Municipal Authority of the Borough of Union City, Union City, Pennsylvania, until 8:00 P.M., on the 6th day of March, 1952, for the construction of improvements to the various utilities of the Borough of Union City.

SECTION I consists of water filtration plant, clear water reservoir and connecting pipe lines.

SECTION II consists of extensions of water mains on various Borough streets, according to schedule in bidding sheet.

SECTION III consists of additions and improvements to the sewage treatment plant and placing of equipment, pumps and making alterations to north side sewage lift station of the Borough of Union City.

SECTION IV consists of construction of sewers in the Borough of Union City in accordance with schedule of bidding sheet.

Separate bids must be made for general construction and for plumbing, heating and electrical. The bids on each section will be considered as a unit. Contractor shall furnish financial statement and list of last six (6) projects completed.

Each proposal shall be accompanied by a certified check in an amount not less than five (5%) percent of the total bid, in accordance with the provisions contained in the specifications.

Copies of the Contract Documents, including plans and specifications, may be obtained from the office of Hill & Hill Engineers, 8 Gibson Street, North East, Pa., or from the office of the Borough Secretary or office of the Secretary of the Municipal Authority, upon deposit of Twenty ($20.00) Dollars for each section. A refund will be made in full to actual bidders for return of one set in good condition within ten (10) days after closing date for receipt of bids. Refund for return of all other sets in good condition within the same period will be fifty (50%) percent of the deposit.

The Municipal Authority of the Borough of Union City reserves the right to reject any or all bids or to reject such parts as would exceed the appropriation for the proposed work.

The Borough of Union City has made CHP-4C application, Government Control No. J-10766, to the National Production Authority for priorities and has received CMP-13, Authorization to Commence Construction, with a priority of DO-28 and an allocation T-8 which will be extended to all contractors bidding on any of this work.

Bids on this work shall be binding for a period of thirty (30) days after closing date for receipt of bids.

MUNICIPAL AUTHORITY OF THE BOROUGH OF UNION CITY
George Michael, Secretary

Bids: March 18, 1952

Midtown Bridge

Sealed proposals will be received by the Chairman of the Public Works Committee and Clerk of the Board of Freeholders of the County of Bergen at the office of the Clerk of the Board, Hackensack, N. J., on Tuesday, March 18, 1952, at 10:00 A.M. for the construction of proposed new approach spans on the MIDTOWN BRIDGE in the City of Hackensack and the Borough of Bogota, N. J.

Specifications may be seen and forms of proposals obtained not later than one day before letting, at the Office of County Engineer, Administrative Building, Hackensack, N. J.

The Bidder's name must appear on the envelope and failure to comply therewith may cause the rejection of the bid.

All proposals must be accompanied by a certified check for ten per cent of the amount bid, payable to the order of the County of Bergen.

The bidder must accompany his bid with a certificate from a surety company acceptable to the Board of Freeholders that such surety company will provide the bidder with a bond, as is required in said specification.

Each bid must be enclosed in a securely sealed envelope and endorsed: "Proposal for New Approach Spans, Midtown Bridge."

The right to reject any or all bids for any cause whatsoever is hereby reserved.

JOHN J. DICKERSON, Chairman
Public Works Committee
William R. Smith, Clerk

POSITIONS WANTED
(Continued from page 73)

CIVIL CONSTRUCTION, Irrigation & Drainage. Engineer-Graduate Civil Engineer. Thirty-five years diversified experience in technical administration, planning, design and supervision over construction works. Recently completed one year on overseas assignment. Interested in position with major construction company or consulting engineering firm. PW-3286, Engineering News-Record.

CIVIL ENGINEER: Contractor-Engineer representative or supervising engineer. Broad field and office experience, general construction, airports, highways, municipal and major defense projects. Reports. Twenty years on responsible assignments in Latin America, West Indies, Pacific Islands and Far East. Fluent Spanish. Willing to travel. Prefer South or foreign but any location considered. Reliable, active and in excellent health. Age 64. Personal interview suggested. Registered P.E. N.Y. Now in New York City. PW-3294, Engineering News-Record.

CIVIL ENGINEER—grad. 2 yrs. experience in city, field and office engineering on paving—water—sewer. 2 yrs. as construction supervisor and surveyor for contractor. Excellent references. PW-3466, Engineering News-Record.

CONSTRUCTION EXECUTIVE, 45, wide experience of 25 years as operations manager, superintendent, engineer, estimator, pricing purchasing and contracting for commercial and industrial buildings and pr jects up to 100 million dollars. Presently employed in responsible position, desires change. PW-3409, Engineering News-Record.

CONSTRUCTION EXECUTIVE — Solid and varied experience as Superintendent and engineer. Versatile, well rounded in every type and phase of heavy construction. Sound knowledge of operations, engineering, costs, and financial problems. Graduate and Registered professional engineer. Available in March. $12000 to $15000 bracket. PW-3390, Engineering News-Record.

ENGINEER OR Project Mgr. open for Employment at once. 55 years of age. 30 years of experience as Engineer Estimator Supt. Highway Location & Const. Large Bridge & Pier Const. Railroad, Const. Dock & Warehouse, Const. Mfg. Plants Foundation Design and const. underpinning. Labor relations, subcontracts cost keeping estimates and complete project control. Would report any where south of Ohio River for interview. Have office equipment and Engineering instruments with new pickup truck for transportation of party. Would rent reasonable if under my control. Expect $12,000. Salary. Address Engineer, P.O. Box 827, Jackson, Miss. Wire same address.

EXECUTIVE CHIEF Accountant or Controller, nineteen years of diversified experience, eight years of it in construction. Sober, reliable and capable of taking complete charge. PW-3320, Engineering News-Record.

FIELD ACCOUNTANT, Office Manager. Experienced in construction office administration, accounting, cost accounting, taxes, payrolls, auditing, personnel, bids, purchasing, expediting, quotations. Frank Imperiale, General Delivery, New York City, N. Y.

FOREMAN, WALKING Boss, Irish-American, 47 years of age, 30 years experience on Highway Construction, South or Central America preferred. PW-3342, Engineering News-Record.

GENERAL CONSTRUCTION Superintendent, experienced in concrete bridges, highways, airports, asphalt paving, and all types of sewer and water main Installations. Industrial buildings, Mechanical Installations. Marine Pile driving. 20 years Experience. Sober, will travel and relocate, age 50, not a college graduate. PW-3269, Engineering News-Record.

GENERAL FOREMAN, 20 years experience, all phases of highway construction. Can organize and manage any size job. Available at once. PW-3167, Engineering News-Record.

GENERAL SUPERINTENDENT Engineering background 30 years experience in construction of Buildings, Roads, Sewers and all phases of Air-field Construction also rehabilitation work. Have served as Project Manager or Supervisor here and abroad. PW-3464, Engineering News-Record.

WORK WANTED

Work Wanted. Part time drafting, detailing, or designing on Structural Steel, Concrete, or related fields. New York City or New Jersey preferred. WW-3408, Engineering News-Record.

SALE — RENT
Immediate Delivery
LORAIN L820 2 C.Y.
SHOVEL, CRANE, DRAGLINE, CLAMSHELL
HI-FRONT—CAT D13000—NEW AIR CROWD—LIGHT PLANT
CHEMICAL SERVICE CO.
145 W. 63 ST., N.Y.C. MURRAY HILL 5-6826

CORPS OF ENGINEERS, Office of the District Engineer, Detroit District, 1900 Cadillac Tower, Detroit 26, Mich., 11 February 1952. Sealed proposals will be received at this office until 2 o'clock p.m. on the 14th day of March 1952, and then publicly opened for the sale of 5 units of used hydro-electric generating equipment, complete, including turbines, generators, miscellaneous switchgear, etc., presently located at Sault Ste. Marie, Michigan. Copies of sale advertisement No. CIVENG-20-064-52-36 (Sales) may be obtained by application to this office and units may be inspected by application to Area Engineer, Soo Area, Corps of Engineers, Sault Ste. Marie, Michigan.

IMMEDIATELY AVAILABLE
34E FOOTE Dual Drum Concrete Paver
Equipped with model HXC Hercules gasoline engine, 35 ft. boom, 60 in. bucket, large auxiliary water tank and pump. Less than two years old. Rebuilt and guaranteed.
F.O.B. N.Y.C. $24,000
Telephone CYpress 2-4800
H. O. PENN MACHINERY CO., INC.
140th St. & East River, New York 54, N. Y.

FOR SALE
NORTHWEST 25 shovel & drag
NORTHWEST 6 shovel & drag
NORTHWEST 6 Backhoe
NORTHWEST 80-D shovel
NORTHWEST 95 Dragline
BUCYRUS ERIE 22-B shovel
BUCYRUS ERIE 54-B shovel & drag
BUCYRUS ERIE 120B dragline
BUCYRUS ERIE 170B shovel
MANITOWOC 3000 dragline
MANITOWOC 4500 dragline
EUCLID Rear Dump Trucks
CATERPILLAR TRACTORS D-7 and D-8
FS-3174, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

TWO MARION ELECTRIC SHOVELS
4 cu. yd; Model 4160, 29' 8" boom, 21' 6" dipper, caterpillar mounted. M-G set operating on 2000 v, 60 cy. 3 ph.
$35,000 each where is, as is, Asbestos, Que.
For further details address
R. P. Shupper, P. A.
JOHNS-MANVILLE CORP.
22 East 40 St. New York 16, N. Y.
Phone: LEx. 2-7600

FOR SALE
7000 feet—Shielded Preassembled Aerial Cable
5 KV—2-0—3 Conductor w/copper shielded tape—Used but in good condition—Corona resisting rubber insulation.
FS-3393, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

FOR SALE
Reliance Crusher 15" x 30"
Good Roads Crusher
Cummins Diesel Power Plant 125 h.p.
Waukesha Power Plant 80 h.p.
Bin 300 ton capacity
Elevator—Conveyors—Gyrex & Vibrex Screens
Striking Ball 6000 lbs.
Warren County Department of Highways
Herrick Osborne,
County Superintendent
Warrensburg, New York

FOR SALE
1—Three axle Tandem Buffalo Springfield 14-18 ton roller
1—Two axle tandem Buffalo Springfield 8 ton roller.
FS-355, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SLIDING FORM EQUIPMENT
250 Steel Yokes Complete with Jack Screws and all fittings.
CROSBY CONSTRUCTION CO.
185 North Wabash Avenue
Chicago 1, Illinois

WANTED

FOR SALE NEW
2—DIESEL ELECTRIC GENERATING UNITS
Caterpillar D-8800 50 KW Continuous Rating. Mounted on steel base complete with radiator, control cabinet, silencer, electric starting and safety shut off devices.
Communicate with Arthur C. Simmons
Bradford, Penna. Box 191 Phone 3148

WANTED
½ CY. SHOVEL ON RUBBER
Late Model
DAVID RHODES
Box 314 Chester, N. Y.

For Sale:
(1) 118 Ransome Concrete Mixer
Pneumatic Tires, Skip Loader, Water Tank.
(New Condition)
(1) Three ton Huber Tandem Roller.
(New Condition)
Wanted:
(1) P-H 255A Shovel or Back-Hoe.
(State condition and serial number.)
WHIPPANY CONSTRUCTION CO.
Hanover, New Jersey

WANTED
GOOD USED ADNUN PAVER
State condition, price, serial number and location.
Low Bed 15 ton trailer.
W-3482, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

DIESEL POWER

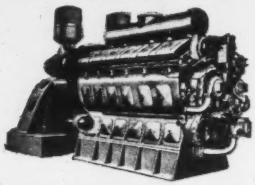
FOR

IMMEDIATE SHIPMENT

UNIT CAPACITIES—10 TO 1875 KVA

A.C.—50 AND 60 CYCLES

VARIOUS VOLTAGE



A PARTIAL LISTING OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8⅛	1600	720	330	Superior	KNA	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12½x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

D.C. UNITS ALSO AVAILABLE

A. G. SCHOONMAKER COMPANY, INC.

DIESEL DIVISION, 50 CHURCH ST., NEW YORK 7, N. Y.

LOCOMOTIVE

1—Plymouth 6 Ton Gas—36" Ga.—Like New.
1—Brookville 10T-30" Ga. Diesel—Like New.
2—Whitcomb 15 Ton, 36" Ga.—Diesel.
1—Brookville—15 Ton—Diesel—Stdy.—Ga.
1—Plymouth 35T. Gas. Std. Ga., Very Good.

LOCOMOTIVE CRANES—STEAM

1—Ohio—30 Ton Coal Fired. Excellent.
Industrial—50 T. Type L.

MISCELLANEOUS

24 Hopper Cars—15 Ton—36" Ga.
1—American 3-Drum Gas Hoist—185 HP. Like New.
2—Hopper Cars—50 Ton.
5—Flat Cars—50 Ton.
2—Conway Mod. 25 Muckers.
1—Mundy D.D. Hoist—300 H.P.—3—60—2200.

R. H. BOYER

2005-13 W. Bellevue St. Phila. 40, Pa.
Phone Sagamore 2-7132

NEW and REBUILT
STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

PORTABLE CRUSHING PLANT: Cedar Rapids 10" x 36" Jaw, 16" dia. Rolls, 3' x 10' Screen, Bucket Elevator, Steel Bin, with 100 H.P. 440 volt motor, or D13000 Caterpillar.

CRUSHERS, JAW: Sizes 12" x 15" to 48" x 60".

CRUSHERS, REDUCTION: Symons, Telsmith, etc., 2 ft., 3 ft., 4 ft. and 5½ ft.

BOILER: Erie City 150 H.P., ASME code, HRT 150 lbs. pressure, 4" x 18' tubes, complete with all fittings.

ELECTRIC MOTORS: 2—NEW 1000 H.P., 188 RPM, 2300 volt, drip proof with automatic switch gear. UNUSED. 1—950 H.P. Hoist Motor, 3 phase, 60 cycles, 2200 volt, 443 RPM, with all control equipment.

MINE HOISTS: 150 H.P., 6'6" dia., 6'8" face; 250 H.P., 72" dia., 48" face; 200 H.P., double drums, one clutched, 8 ft. dia., 4 ft. face. All 3 phase, 60 cycle, 2200 volt, with control equipment. Head Frame for double shaft 16'9" x 17'2", height 55 ft., with or without 8 ft. dia. sheaves for 1½" rope. Other Hoists 100 H.P. to 1050 H.P., single and double drum with electric equipment.

COMPRESSORS: Worthington DC2, 29 18½ x 21, motor 600 H.P. synchronous, 440 volt with all auxiliary equipment. 4—Ingersoll Rand Diesel portable, 500 cu. ft. @ 100 lbs. pressure, New 1951.

DIESEL MOTOR: Caterpillar D13000 portable on skids, 122 H.P.

DRYERS or KILNS: 2—10 ft. x 90 ft., heavy duty, with or without auxiliary equipment, condition like NEW. 1—Kiln 4 ft. dia. x 65 ft., complete with all equipment, oil fired, like NEW.

A. J. O'NEILL

Lansdowne, Pa.

Phila. Phones: MAdison 3-8300—3-8301

Portable Compressors

NEW & REBUILT

Sales—Rental
Rental Purchase

15 CFM LINDSAY (Gas) 2 Pneu
25 CFM LINDSAY (Gas) 2 Pneu
30 CFM WORTH. (Gas) 2 Pneu
50 CFM LINDSAY (Gas) 2 Pneu
66 CFM WORTH. (Gas) 2 Pneu
105 CFM WORTH. (Gas) 2 Pneu
105 CFM WORTH. (Gas) 4 Pneu
160 CFM WORTH. (Gas) 2 Pneu
160 CFM WORTH. (Gas) 4 Pneu
210 CFM WORTH. (Gas) 4 Pneu
315 CFM WORTH. (Gas) 4 Pneu
315 CFM WORTH. (Diesel) 4 Pneu
500 CFM WORTH. (Diesel) 4 Pneu
575 CFM WORTH. (Diesel) 4 Pneu

RENT—SELL—BUY

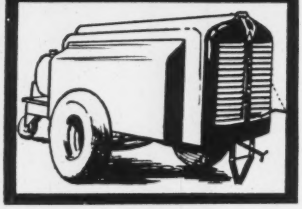
— LIKE NEW —

596 CFM—100 H.P. Motors—100 = Schramm Model 420 Base Mounted — 3/60/220/440 — Built-in type with self contained cooling system—Three available —immediate shipment.

GET BETTER FOR LESS

American Air Compressor Corp.

Dell Ave. & 48th St., North Bergen, N. J.
SINCE 1902



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Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
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Drop Pile Hammers and Caps
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FOR SALE

10-TON General

Model 307

Self Propelled Crane

Gasoline powered, 60-foot boom.

G. T. SMITH

Welding Shipyards

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CLAMSHELL & ORANGE PEEL BUCKETS

Sizes: ⅝ to 2½ cu. yd. capacity.
Good used condition.

G. A. BASS Birmingham, Mich.

FOR SALE

40 ton Orton Diesel Locomotive Crane
30 ton Ind. Brownhoist Gas Loco. Crane
Clyde 45 ton Elec. Gantry Crane new 1949
Manitowoc 2000 Crane 1½ yd. 80 ft. bm.
65 ton Whitcomb Diesel Elec. Locomotive
8¼ x 10 Clyde 3 Drum Steam Hoist
Rex 200 Single Pumpcrete. Gas powered
Northwest 80D 2½ yd. Diesel Combination
60 HP American 3 Drum Gas Hoist

MISSISSIPPI VALLEY EQUIPMENT CO.

509 Locust St. St. Louis 1, Mo.

SALE OR RENT

1—10 Ton Link Belt YC-9 Cargo Crane
1—10 Ton Browning 15-C Truck Crane
1—½ Yd. Unit 10-wheel Truck Crane
1—MC414 Lorain Truck Crane
1—TC70 Link Belt Truck Crane
2—D6 Caterpillar Tractors—Hydr. Blades
1—25 N.W. Crane 1948
1—⅜6 N.W. Shovel 1948
2—45 Ton Diesel Elec. Locos.
1—6 Ton Huber 3W Roller gasoline
2—10 Ton Stiff Leg Derricks
1—40 Ton Orton Diesel Loco. Crane
1—40 Ton Industrial-Brownhoist Oil Fired Loco. Crane New 1943

B. M. WEISS CO.

Girard Trust Co. Bldg. Phila. 2, Pa.
Rittenhouse 6-2311

Lorain MC 414 Truck Crane #14468
NW 6 Backhoe, Crane Drag #13205
Backhoe attachment for B.E. 22B.
D6 TRAXCAVATOR #9U1138 Good
1 Hyster D8N Towing Winch
D-6 w/Cable Angledozer #8U1440
Cat. D 4 with Hyd. Bull Dozer 7U6200 series
2 #49 FD Euclid Rear Dumps 7700 series
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Duo-way Scoopmobile A-1 Condition
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AIR COMPRESSORS

Gardner-Denver 500 cu. ft. diesel, new condition.
Gardner-Denver 365 cu. ft. Diesel Rebuilt.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

QUARRY EQUIPMENT & BINS

4024 Cedarapids roll, rebuilt.
Symons 3' short head.
Cedarapids Rock-It with 2025 jaw, 3033 mill, new.
Cedarapids 1236 Model 6C plant, new.
3033 Cedarapids Hammermill, Rebuilt.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 6' Kennedy Van Saun single deck.
3' x 12' Simplicity 3 deck, rebuilt.
3' x 6' Kennedy Van Saun triple deck.
3' x 10' Symons double deck.
16" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
Conveyors—18"—24"—30"—36". Also belt.

TRUCKS—TRAILERS

1½-ton Ford with any body.
2½-ton GMC, rebuilt.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
2,000 gallon tanks on semi-trailer mounting.

GENERATORS & LIGHT PLANTS

1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

GASOLINE AND DIESEL ENGINES

Buda, Hercules, Hill diesels, rebuilt.
New and rebuilt Murphy diesels, ME-4 & 46.
GM 6 and 12 cylinder diesels, practically new.

SHOVELS—CRANES

Lorain L-50, 1-yd. diesel. New condition.
L-41 diesel powered ¾-yd shovel, rebuilt.
Brownhoist 1-yd. gas shovel and crane.

SHOVEL & CRANE ATTACHMENTS

Lorain TL-20 shovel attachment.
Lorain 41 Chain Crowd Shovel Attachment. Complete.
Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 80-820 fairleads.

Backhoe Buckets & Attachments

Lorain TL-25 hoe attachment, new.
Lorain 30 hoe attachment complete.
¾-yd Lorain, 40, LBS #6105. 44" cutting width.
26" outside width solid bottom type LBS #4377, good condition.
¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd, Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.
Esco 2½ yd cast weld dipper with bail & teeth

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.

Concrete Road Forms

1220'—Heltzel 9"x8" forms with stakes.

Fine Grade Machines

R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new 1944, rebuilt.
Carr formgrader, new 1944, rebuilt.

WELL DRILLS & TOOLS

Keystone 70 well drill. Good.
Sanderson-Cyclone #42 well drill, new.
Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

PUMPS

New Layne Bowler type 18 deep well pump with right angle gear drive. 3000 GPM at 120' TDH.
Used and rebuilt pumps, all sizes, gasoline, electric or diesel.

GRADERS

Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

Phone HARRISBURG, PA. 7-3431

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L.B. SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

TUNNEL EQUIPMENT

ELECTRIC LOCOMOTIVES, with extra batteries

3—Whitcombe, 10 Ton, 36" Gauge
6—Greenburgs, 11 Ton, 36" Gauge

MUCKING MACHINES

3—Eimco Rockershovels, Model 40
4—Conway-Muckers, Model 75

CARS

38—5 Cu. Yd. Side Dump, 36" Gauge

MISCELLANEOUS

2—Roots-Connersville Blowers, 7300 c.f.m.
3—40 K. W. Battery Charging Units
2—20 K. W. Battery Charging Units
16—Ingersoll-Rand DA 35, wet type, Drifter Drills
24—Ingersoll-Rand S 70 Motor Feed Drifters
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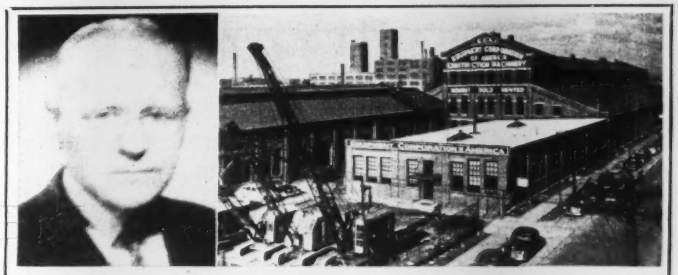

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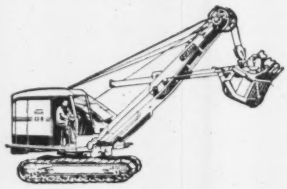

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FS-3394, Engineering News-Record
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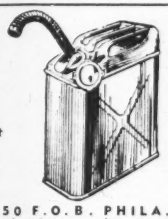

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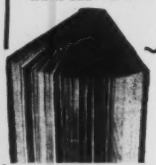

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Fork lift attachment for Moto-Bug

Just a few minutes before this picture was taken this Motor-Bug might well have been carrying a 1,500-lb capacity flat bed platform, a 10-cu ft capacity hopper body or a 5-ft scraper blade. What's more in another few minutes it may be back doing the same job again. Right now, it's handling the latest attachment—a 5-ft power-driven fork lift attachment.

The new materials-handling device has a capacity rating of 1,000 lb at 15-in. load center. It can climb a 12 percent grade with full load and has a 61-in. turning radius. The operator, riding on a rear step, has control of full power forward and reverse. Although not visible in the picture, a dual rear wheel is connected through a 3.6 to 1 gear reduction directly to the steering wheel. Standard forks are 20 in. long and adjustable to any required width up to 33 in., the standard width of the Moto-Bug.

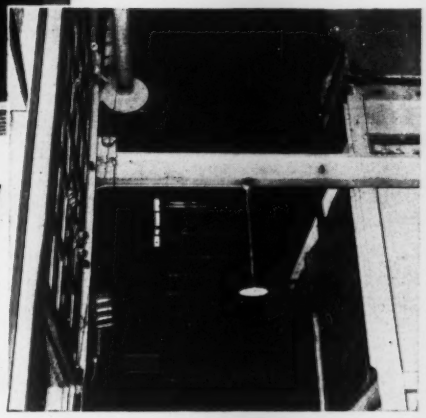
Power is transmitted by V-belt and roller chain from a standard 6 hp gasoline engine, through an automotive type differential in the front axle for two-wheel drive. Weighing only 1,500 lb, the fork lift Moto-Bug can work with safety on old floors, be carried in elevators or cargo planes, and will easily be supported on light ramps. 75 percent of the loaded weight is on the front drive tires which can accept dual-drive wheels if optionally desired. KWIK-MIX COMPANY, PORT WASHINGTON, WISCONSIN.

Bridge ramp for loading, unloading

During World War II at the request of the U. S. Navy the one-man bridge ramp shown above was designed to aid in promoting economical and safe materials handling. It is now available commercially and is meeting with great success. To place or relocate the ramp, the fork lift operator need not dismount from the machine but can pick up the bridge by inserting the forks of the truck through two lifting rings. It is then transported to its new location (between platform and freight car above)

(*Continued on page 87*)

To safeguard boiler-to-smokestack breeching against corrosion . . .



Fort Howard Paper Company used BYERS WROUGHT IRON PLATES

To protect the new breeching system from the double corrosive threat of sulphur-bearing flue gases and high temperatures, engineers of the Fort Howard Paper Company, Green Bay, Wisconsin, specified genuine wrought iron plates for the service. More than 30 tons of Byers Wrought Iron plate was used in the system, which conveys flue gases from the rear of the boilers in the power plant to the smokestack.

The selection of genuine wrought iron for these services follows accepted design practice, and is endorsed by performance records in almost identical applications that testify to the material's superior corrosion resistance. Engineers have applied genuine wrought iron to almost every "hot spot" in modern plants. Its ability to last longer, at lower cost-per-year has been convincingly demonstrated in plants all over the country.

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This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

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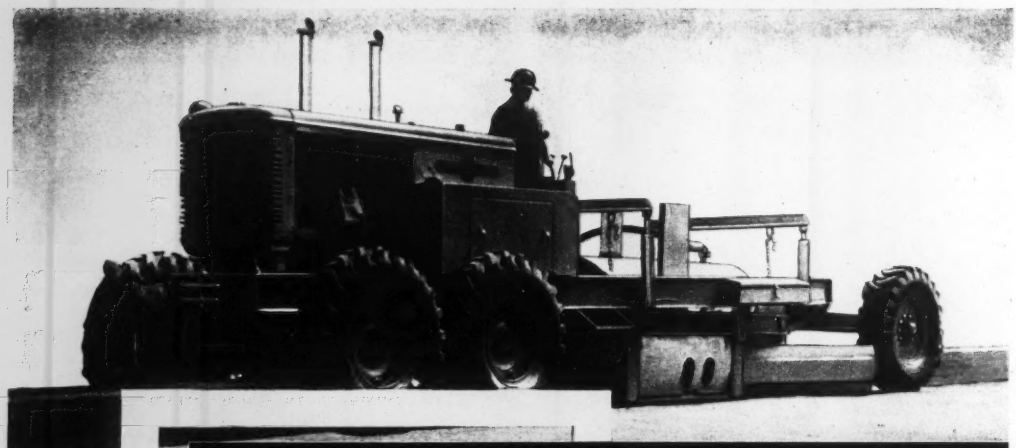

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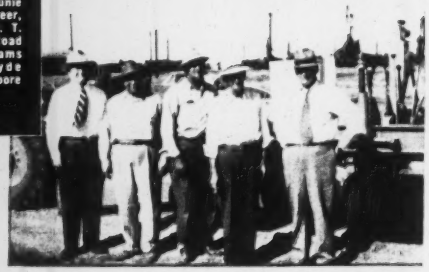

ABOVE: Section of Adams County road mixed with Model 42 Wood Roadmixer.

BELOW: Left to right: J. C. Moore, President, and Art Schultz, of H. W. Moore Equipment Co., Wood Distributors, Denver, Colorado; Dunie LaTorra, Road Overseer, Adams County; W. T. Waymire, County Road Commissioner, Adams County; and Clyde Carlee of H. W. Moore Equipment Co.

Here is what E. G. Waymire, Chairman, Board of County Commissioners, Adams County, Colorado, has to say about the Model 42 Wood Roadmixer:

"Adams County purchased a Model 42 Wood Roadmixer last fall, and used it very successfully on two of their highways. The first job was completed on a well-traveled county road, serving several oil companies and other businesses requiring heavy truck service. We liked the operation of the Mixer on this job, as we were able to complete this road in a day without interrupting traffic. This road has been in for several months now, and is standing up very well.

"The portability of the Mixer is also of an advantage in our county work. Our county is pretty well spread out and we have many miles to travel from one job to another.

"So far we are very well pleased with the Model 42, and find that our costs of building roads with this machine are much cheaper than any previous method we have used, and that we are also getting a first class mixing job with the machine."

This is another example of how Wood Roadmixers are saving taxpayers' dollars by producing long-life roads at less cost than any other method or equipment used for surface courses or base stabilization.

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and the forks withdrawn. Lift handles then drop into slots providing a flush riding surface. Locking pins, fixed in the floating arm, firmly secure it in place.

Various sizes and types of bridge ramps can stand gaps from 5 to 58 in. with differential in heights up to 7 in. The side stringers add rigidity and act as a safety guard. Outstanding safety feature is the locking scheme, a self-leveling, multi-holed locking device provided with locking pins which travel in channels and fit into holes to prevent shifting after the bridge has once been set in place. ELIZABETH IRON WORKS, INC., P. O. BOX 360, ELIZABETH B, NEW JERSEY.

Braided wire grounds pneumatic hose

A midwestern contractor in collaboration with a leading public utility company, put this Invincible Safety Air Hose through a series of tests to determine the extent of its safety protection. It has a braided copper ribbon of 832 strands which forms a high current-carrying medium and is securely bonded in the abrasion- and heat-resisting hose. On a deliberate short circuit with an electric timer set for one second, with a current reading of 2250 amps and a voltage reading of 480 volts, the hose became warm but not enough to be uncomfortable; yet it tripped the circuit breaker within one second. The test definitely proved that the hose could be held without any danger of an electric shock.

Inspection of the original test lengths used continuously for a year in normal service indicated that, in addition to its proven safety features, this hose will considerably outlast ordinary types. It is available in ½ in. I.D. sizes, in 4- and 5-ply construction from MERCER RUBBER CORP., 66 READE STREET, NEW YORK 7, N. Y.

Inexpensive bits can be thrown away

The DBT Throwaway bit, as its name implies, is a one-pass bit, made so inexpensively that it can be thrown

(Continued on next page)

Los Angeles market building using glued laminated 74' timber arches designed and fabricated by Summerbell Roof Structures, Inc., Los Angeles.

In thousands of buildings today, such as shown above, sturdy timber construction is doing its usual peace-time job and at the same time there is plenty of timber available for defense construction.

More and more engineers and architects are designing in timber.

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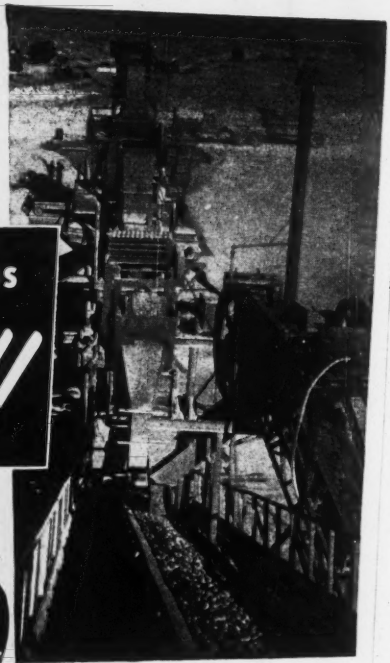

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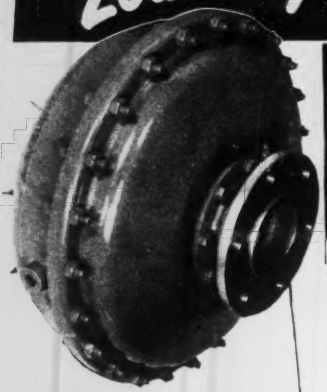

with TWIN DISC HYDRAULIC COUPLINGS

FOUR conveyor flights . . . fully loaded . . . started from a *dead* stop with *squirrel-cage* motors.

That's the report from the Pecos, Texas, gravel plant of F. M. Reeves and Sons, where *squirrel-cage* motors are equipped with TWIN DISC HYDRAULIC COUPLINGS.

The "slip" of the hydraulic fluid at low rpm permits each motor to accelerate—*independently*—to working torque, and then to pick up the load smoothly. The couplings not only protect the motors against overload, they balance the load between motors.

And, at all times, they keep heavy demand current surges and loads off the line . . . make most electric motors perform more work.

At Reeves, Flight No. 1 is driven by a 30 hp, 880 rpm, squirrel-cage motor through a 17.5" Twin Disc Coupling . . . No. 2 and No. 3 flights each are powered with 25 hp, 1170 rpm, squirrel-cage motors driving through 14.5" Twin Disc Hydraulic Couplings . . . and No. 4 with a 50 hp at 1170 rpm squirrel-cage motor, through a 21" Twin Disc Hydraulic Coupling. The entire system moves from 180 to 350 yards of gravel and topping per hour.

There is one proved way to enable *your enclosed* squirrel-cage motors to pick up the load without other special equipment, to make these motors last longer, and to keep current demand surges off the line. Do as Reeves and hundreds of others have done. Equip your electric motors with Twin Disc Hydraulic Couplings. Write for Bulletin No. 144-C for complete information—and the name of your nearest dealer.

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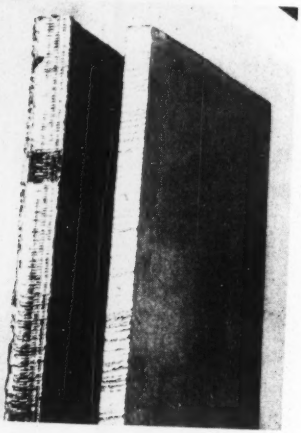
New Products . . .

away when worn out, instead of being resharpened. Made by a veteran manufacturer of rolls and machinery for the iron and steel industry, the line of forged steel disposable bits for the heavy construction industry is said to permit faster drilling, assuring a smooth, clean hole and longer bit life. Bits are made in a size range from 1¼ to 2¾ in. In addition, the company supplements the line with hollow steel drill rods of carbon-manganese-silicon steel, designed for use with the DBT Throwaway. A newly formed subsidiary known as the Drill Bit & Tool Company will handle sales of the new product in the U. S. and South America. DRILL BIT & TOOL DIVISION, MACKINTOSH-HEMPHILL COMPANY, 901 BINGHAM STREET, PITTSBURG 3, PA.



Wax coolant

The newest industrial product developed by the makers of Johnson's wax is a wax coolant formulated especially for use with power hack saws and routers. The non-flammable coolant has excellent cooling properties and provides uniquely effective lubrication.

The wax coolant greatly reduces wear of the router bits when used with radial arm routers, and eliminates much of the welding and burring on routed edges. Of the two pieces of 75 ST aluminum shown above, a conventional lubricant was used on the piece at the left along with an Onsrud high-speed radial arm router. This left a heavy burr and permitted only three cuts per tool, according to the manufacturer. Johnson's No. 170 coolant was used on the piece at the right and allowed 11 cuts per tool,

(Continued on page 90)

confronted with an oversize job?

. . . or a small one?

Driving Sectional Pipe Piles Inside Building with Hammer Mounted on Toumotor.

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has equipment to do both!

When you call in Raymond, you are turning your foundation work over to an organization which has specialized equipment, operated by expertly trained men, for pile jobs of any size. With 55 years of experience in foundation work ranging from a few test piles to more than 40,000 piles for one structure—Raymond has established a record for outstanding service.

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And BONDERIZED for Rust Resistance and Protection Against Corrosion

All KERRIGAN GRATING is Weldforged TRADEMARK by an exclusive process to form one inseparable unit.

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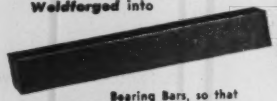
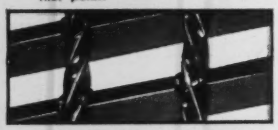
Transverse bars, with CONTINUOUS spirals are Weldforged into



Bearing Bars, so that the two bars become one at that point.



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leaving no burr and requiring 50 percent less effort to pull and guide the router bit.

Whenever degreasing is necessary, the residual coolant can be removed from the metal with conventional vapor degreasers or in alkaline washes. The product is definitely **not** intended for use in machines which have return systems. JOHNSON'S WAX COMPANY, RACINE, WISCONSIN.

Bogie wheels and rollers available

A complete line of Sterling Bogie wheels for crawler type tractors is now available, fully equipped with Timken bearings and featuring positive seals for exclusion of all foreign matter. The manufacturer claims that they need not be lubricated until after 1500 hours of continuous operation, and their permanent locking devices assure perfect bearing adjustment at all times. Easily dismantled whenever necessary, the Sterling rollers are independent of one another, resulting in less friction on crawlers. STERLING STEEL CASTING COMPANY, P.O. BOX 230, EAST ST. LOUIS, ILLINOIS.

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The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

A Report to Surveyors

It has been more than a year since the first in this series of "unusual surveying problems and their solutions" appeared in your engineering journals.

Massachusetts survey

The initial page in "The Surveyor's Notebook" showed how a Commonwealth of Massachusetts survey party used captive pilot balloons to get initial lines between stakes separated by heavy timber.

Since then, "The Surveyor's Notebook" has developed into a forum through which veteran field men voice their experiences in solving tough problems and eliminating common surveying hazards—for the benefit of other surveyors and engineers.

A Nebraska deputy county surveyor, for example, has relieved many a headache by explaining how he quickly determined a quarter-section line which was completely blocked by railroad cars. So did Stan Shartle of Danville, Indiana, with his account of leveling over 10 feet of corn.

Joe Thoma

One month, Joe Thoma, the prominent cadastral engineer, gave his remedy for "frozen" tripods; later told of the advantages of the solar transit.

These stories—and letters commenting on them—have come from all over the nation.

Niagara Falls' Corps of Engineers related how it made the first accurate survey of the Niagara River bed with the aid of unusual transit practices. The Chief Locating Engineer of North Carolina has created a great deal of discussion with his plan for improving land survey records.

Through "The Surveyor's Notebook", Gordon Ainsworth told how to get an oil pipeline laid in record time by using a few tricks of the trade.

Gordon Ainsworth

Dick Merritt described the unusual problems of surveying in the Arctic, while Jim Caputo showed how aircraft plants use transits. (His story led to the development of a new Gurley instrument for the industry.)

A great many surveyors have written to us saying that the experiences they read about in "The Surveyor's Notebook" have helped them solve their own field problems. And a number of the engineering colleges have requested copies regularly as classroom aids.

Gurley will continue to be notekeeper for the series; welcomes your comments and suggestions—and, of course, your own experiences.

The first year's stories and surveying tips have been gathered together and reprinted in permanent form. Write for your free copy of "The Surveyor's Notebook" *collection.*

When writing for your bound copy of "The Surveyor's Notebook" stories, ask also for Bulletin 50. It gives full details on Gurley instruments.

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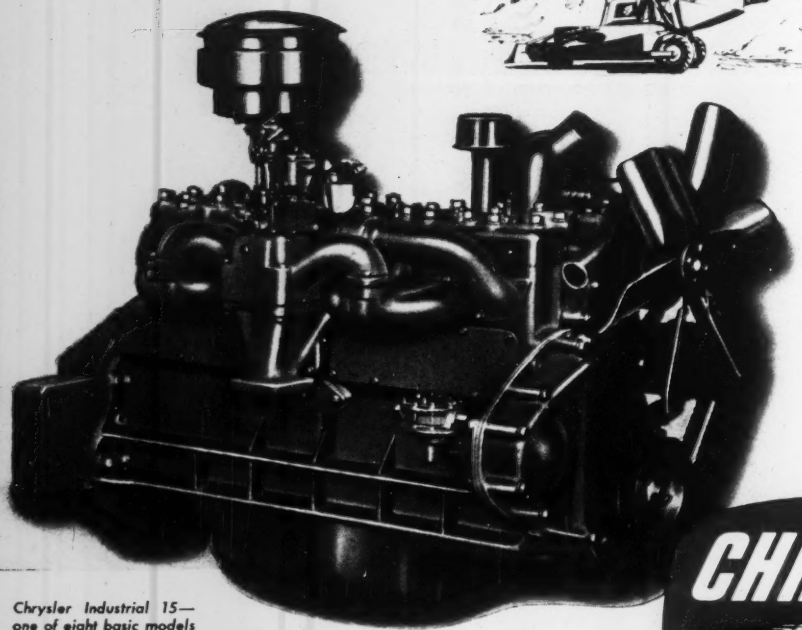

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MANUFACTURERS' PUBLICATIONS

Flintkote Industrial Products Digest—is a 24-page, pocket-size, illustrated booklet briefly describing many of the standard and specialized products comprising the company's products for industry. It is intended to serve as a guide to specific as well as custom formulated asphalt emulsions and cutbacks, asphalt, rubber and resin adhesives, coatings and sealers. THE FLINTKOTE COMPANY, INDUSTRIAL PRODUCTS DIVISION, 30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Rectangular steel bridge flooring—Designated the IQ-35 steel bridge flooring, this latest development by the Kerlow Company is made with grating parallel with traffic and transverse to traffic. In the latter type the transverse bars that the tires ride on are placed higher than the longitudinal bars, and the transverse bars are serrated to enable tires to maintain or to develop greater traction for emergency stopping. Whether laid longitudinally or transversely on a bridge it is said to carry H20 loading (highway load of 20 tons) on a 15-in. circle up to a span of 48 in. Each unit weighs approximately 19 lb. per sq ft. KERLOW STEEL FLOORING CO., 222 CULVER AVE., JERSEY CITY 5, N. J.

Wood preserving booklet—The American Wood-Preservers Association announces the issue of a completely revised AWPA Manual of Recommended Practice. It contains all of the current standards of the Association relating to preservatives, treatment of commodities, and analysis methods used in the impregnation of wood for protection against fungi, insects, marine borers and other destructive agents. It also contains miscellaneous standards for the purchase and preservation of forest products, inspection and care of treated wood, and conversion factors and correction tables.

It is a useful guide to the producer, consumer and ultimate user of treated wood products as well as for specification writers, engineers, architects, purchasing agents, contractors and builders. Only confirmed standards are published in the new 150-page looseleaf notebook. AWPA is a technical association comprised of over 1400 individual members who have some 32 active technical committees. The booklet is available from AMERICAN WOOD PRESERVER'S ASSOCIATION, 839 SEVENTEENTH STREET, N. W., WASHINGTON 6, D. C.

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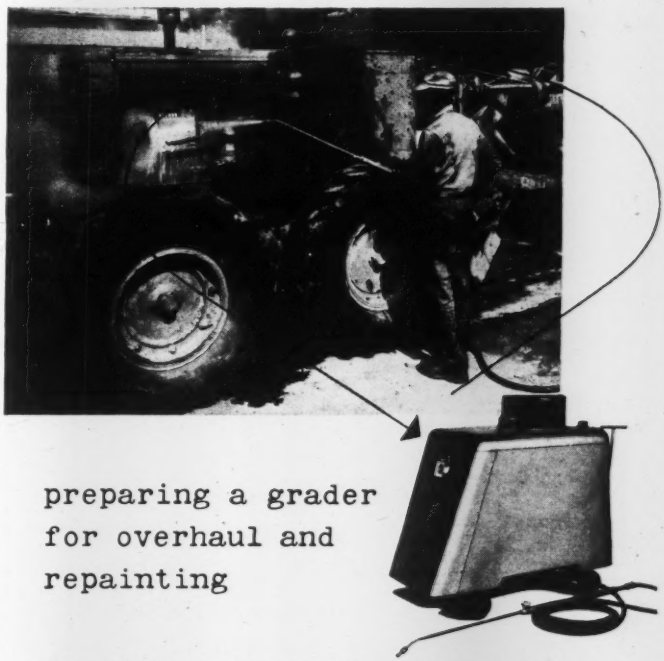

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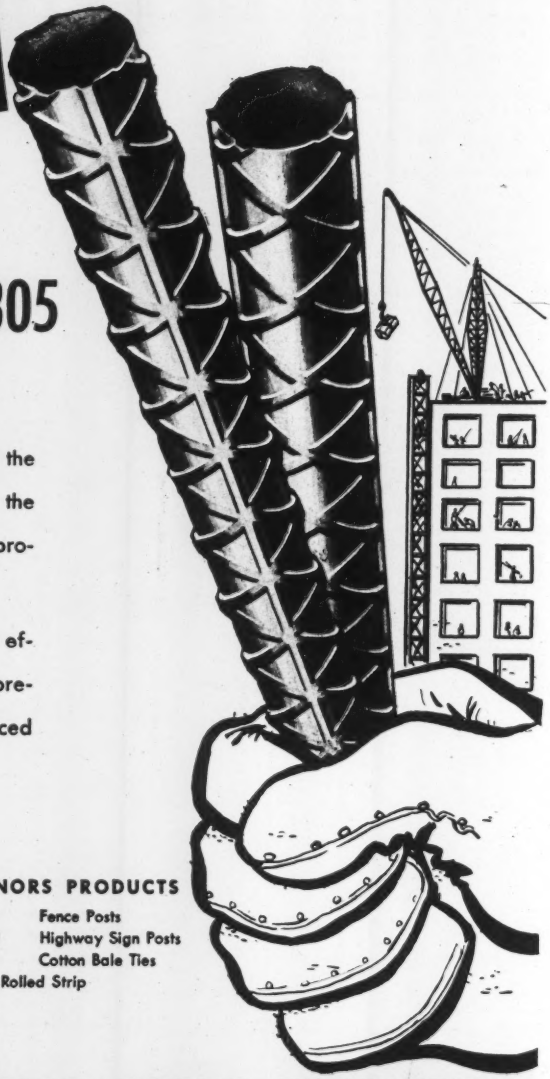

- We are pleased to announce that the new improved reinforcing bar meeting the ASTM A305 specification is now being produced at CONNORS.

- This new bar is an improved, more efficient, concrete reinforcement, which represents an advancement in the field of reinforced concrete construction.

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TABLE OF ASTM A-305 SPECIFICATIONS

BAR NUMBER	WEIGHT	DIAMETER	AREA	PERIMETER
②	.167	.250	.05	.785
③	.376	.375	.11	1.178
④	.668	.500	.20	1.571
⑤	1.043	.625	.31	1.963
⑥	1.502	.750	.44	2.356
⑦	2.044	.875	.60	2.749
⑧	2.670	1.000	.79	3.142
⑨	3.400	1.128	1.00	3.544
⑩	4.303	1.270	1.27	3.990
⑪	5.313	1.410	1.56	4.430

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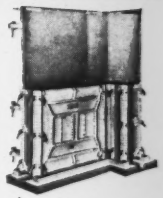

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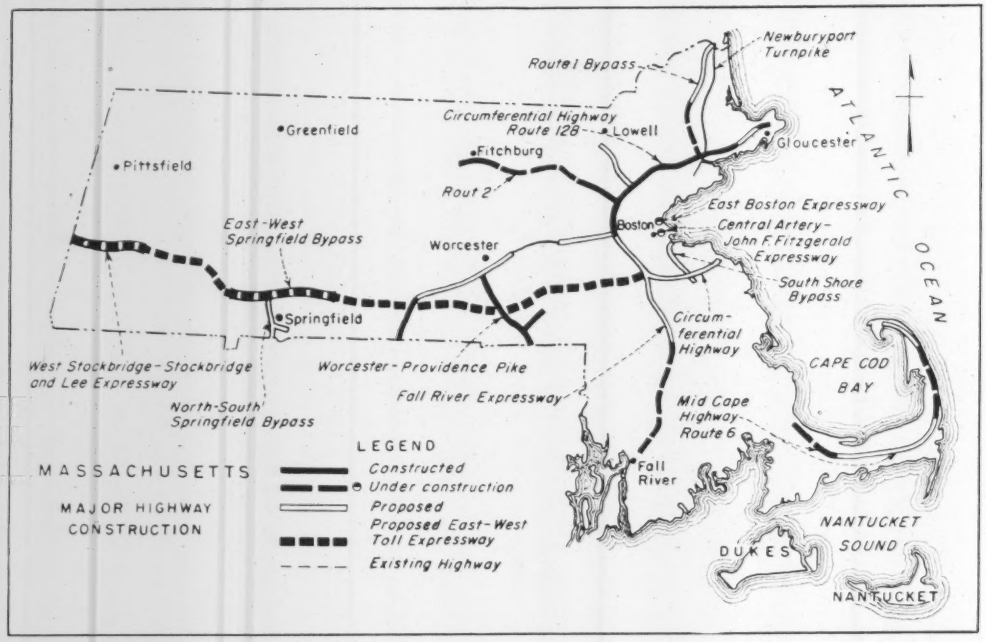


Toll highway to compete for traffic

With an eye on rich tourist trade and heavy truck traffic, the Massachusetts State Public Works Department proposed to compete with Connecticut by building a toll highway to connect with New York State's Thruway.

The creation of a toll road authority to make plans for the east-west expressway was recommended by State Public Works Commissioner William F. Callahan at a recent hearing before the Legislative Committee on Highways.

Massachusetts is proposing this highway because to the south Connecticut's Merritt Parkway can link its east-west traffic with the New York Thruway and thus become the natural gateway to New England.

Using Cape Cod and the North Shore of Massachusetts, the historic towns of Concord and Lexington, and the colonial background of Boston as lures, Massachusetts hopes that tourists will funnel through its new highway.

The plan includes special lanes for busses and trucks that would speed transport of goods at low cost. Other projects, shown above, are:

• **Newburyport Turnpike**—Three contracts have been let by the Department of Public Works for a project to replace the Newburyport Turnpike with a double-barreled expressway. By 1953 the broad new highway will be handling a greater volume of traffic than the present turnpike.

The new construction project will serve industrial and commercial enterprise as a direct link to the tollways of New Hampshire and Maine.

• **Route 128**—An easterly extension of Route 128 East to Gloucester is in the hands of a large contracting firm and the completion date has been set for October, 1952. Another section will soon be out of the planning stage and be let for bidding.

• **Proposed tunnel authority**—A bill is pending before the Massachusetts Legislature for the construction of a second traffic tunnel under Boston Harbor between the city proper and East Boston. The plan calls for the establishment of a tunnel authority, which would take over the existing tunnel and operate it with the new tube. Estimated cost of the new tunnel is $35 million.

• **Boston-Lowell Expressway**—Bids for the first contract for the construction of the Boston-Lowell Expressway were opened Jan. 22. This highway was originally planned in 1939 when the first part of it was built.

The new road will provide safe and free access to industrial plants along the perimeter of Route 128. In Boston, the John F. Fitzgerald Expressway is being built to ease the lagging traffic streams in the business district of Boston proper. The East Boston Expressway is being built to carry 80,000 vehicles daily to intown destinations.

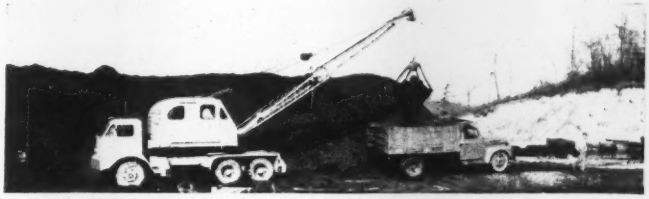
• **New Expressway**—Bids were opened for the construction of 4.5 mi of expressway between Lowell, Mass., and Route 128. The expressway has two 34-ft roadways with a 20 ft dividing zone.

• **South Shore Expressway**—Construction of South Shore Expressway from the shoreline through Weymouth Landing to the junctions of Routes 3 and 18 will alleviate much congestion.

Reclaiming coal

Rupp Brothers, Incorporated, general contractor of Kittanning, Pennsylvania, use one of their five MICHIGAN Truck Excavators to reclaim coal for the Powell Coal Company. Coal formerly lost by diverting coal washings into rivers and streams is now pumped into settling pits and reclaimed by the mine. Rupp Brothers use this ½-yard MICHIGAN clamshell to spread the still wet coal dust over high ground for drying.

Says operator Ken Rupp: "MICHIGANS are tops with me. They're fast and easy to maintain. I especially like the air controls". States A. L. Rupp, president: "Our MICHIGANS require very, very little maintenance. They're always available so we get contracts others can't handle because their equipment is tied up for repairs".



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Model TMDT-16
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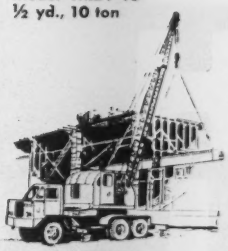

Model TLDT-20
12 ton

Series 8
½ yd., 8 ton

Model C-16
½ yd., 8 ton

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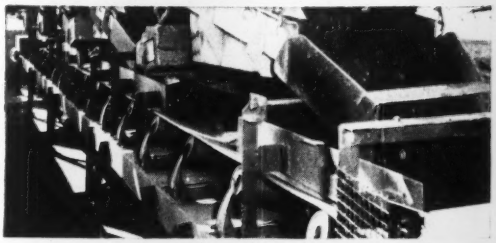
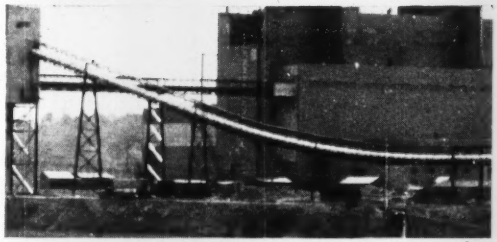
This 42" conveyor by Continental Gin handles coal at the rate of 300 TPH. To provide maximum dependability and long life, the Continental idlers are mounted on Timken® bearings.



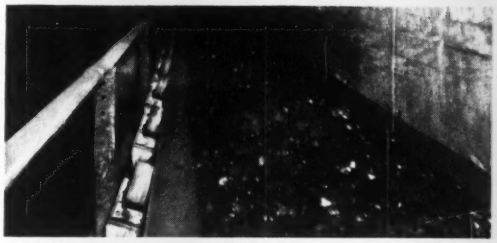
AND TIMKEN . . .

Mounted on Timken bearing equipped Webster idlers, this conveyor transports coal from a mine preparation plant into a power plant. Idlers turn freely, frictionlessly, reducing belt wear.



AND TIMKEN AGAIN!

550 TPH of raw coal are carried from mine to cleaning plant by this conveyor. To minimize maintenance and keep heavy loads moving smoothly, the Link-Belt idlers are mounted on Timken bearings.



AND HERE ARE 6 BIG REASONS WHY:

1 **THOROUGHLY PROVED.** The Timken bearing is the only tapered roller bearing proved by 15 years or more of service in heavy duty conveyor installations using the popular dead shaft construction.

2 **EXTRA CAPACITY.** Line contact between rollers and races gives Timken bearings high load capacity. And by using Timken bearing sizes that are mass produced for the automotive industry, you get extra capacity Bearings that actually cost *less* than the smaller sizes you'd normally use.

3 **LONG-LIFE LUBRICATION.** Not just lubricated for "life" but lubricated yearly or as conditions require to insure *long* life. Fresh lubricant ends gummy, sticky, jammed bearings.

4 **LONGER ROLLER AND BELT LIFE.** Less sliding and scuffing between idlers and belt.

5 **FRICTION MINIMIZED.** Timken bearings' true rolling motion and extremely smooth surface finish practically eliminate friction.

6 **MAINTENANCE REDUCED.** Long life and dependable performance of Timken tapered roller bearings cut maintenance to a minimum.

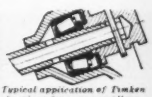
Remember "Timken" is not a bearing type. It is a trademark applying only to bearings made by The Timken Roller Bearing Company. Always insist on Timken bearings in the conveyors you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

Wherever the going's tough industry turns to

TIMKEN

TRADE MARK REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS



Typical application of Timken bearings for conveyor idlers.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▱ BEARING TAKES RADIAL ◫ AND THRUST ⊣◫⊢ LOADS OR ANY COMBINATION ✳